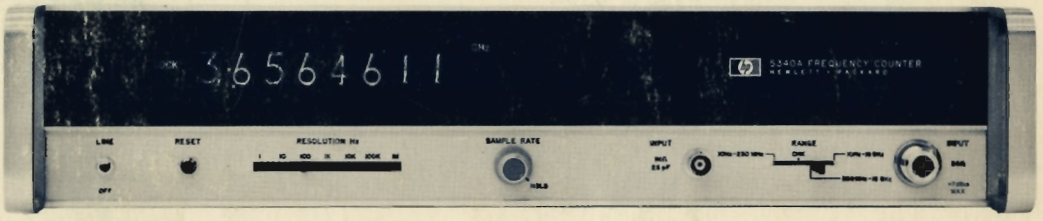
OPERATING AND SERVICE MANUAL

FREQUENCY COUNTER
5340A



HEWLETT hp PACKARD

HP 5340A

CERTIFICATION

The Hewlett-Packard Company certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from the factory. The Hewlett-Packard Company further certifies that its calibration measurements are traceable to the U.S. National Bureau of Standards to the extent allowed by the Bureau's calibration facilities, or to the calibration facilities of other International Standards Organization members.

WARRANTY AND ASSISTANCE

This Hewlett-Packard product is warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery. Hewlett-Packard will repair or replace products which prove to be defective during the warranty period provided they are returned to Hewlett-Packard. No other warranty is expressed or implied. We are not liable for consequential damages.

Service contracts or customer assistance agreements are available for Hewlett-Packard products that require maintenance and repair on-site.

For any assistance, contact your nearest Hewlett-Packard Sales and Service Office. Addresses are provided at the back of this manual.

MODEL 5340A

FREQUENCY COUNTER

OPERATING AND SERVICE MANUAL

SERIAL PREFIX: 1532A

This manual applies directly to Hewlett-Packard Model 5340A Frequency Counters with serial prefix number 1532A.

SERIAL PREFIXES NOT LISTED

For serial prefixes above 1532A, a "Manual Change" sheet is included with this manual. For serial prefixes below 1532A, refer to Section VII of this manual.

Manual Part No. 05340-90021
Microfiche Part No. 05340-90022
PRINTED IN U.S.A.
SEPTEMBER 1975

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5301 STEVENS CREEK BLVD., SANTA CLARA, CALIF. 95050

HEWLETT hp PACKARD

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WARNING

115 VOLTS AC AND 175 VOLTS DC ARE USED IN THIS INSTRUMENT. SOME OF THE MAINTENANCE AND SERVICING OPERATIONS DESCRIBED HEREIN ARE PERFORMED WITH POWER SUPPLIED TO THE INSTRUMENT WHILE PROTECTIVE COVERS ARE REMOVED. EXERCISE EXTREME CARE WHEN PERFORMING THESE OPERATIONS. LINE VOLTAGE IS ALWAYS PRESENT ON TERMINALS INCLUDING THE POWER INPUT CONNECTOR, FUSE HOLDER, POWER SWITCH, ETC. IN ADDITION, WHEN THE INSTRUMENT IS ON, ENERGY AVAILABLE AT MANY POINTS MAY RESULT IN PERSONAL INJURY OR DEATH WHEN CONTACTED.

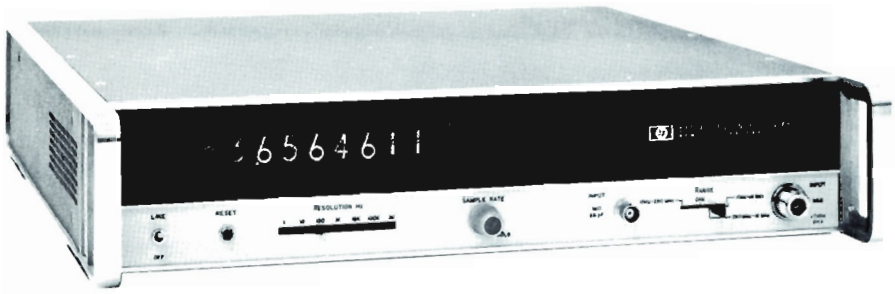
WARNING

THIS INSTRUMENT IS SUPPLIED WITH A THREE-WIRE POWER CABLE. THE CENTER THIRD WIRE IS INTENDED TO CONNECT THE INSTRUMENT CHASSIS TO EARTH GROUND WHEN USED WITH A PROPERLY WIRED THREE-CONDUCTOR OUTLET. REFER TO SECTION II FOR DETAILS OF POWER CONNECTION. IMPROPERLY GROUNDED EQUIPMENT CONFIGURATIONS MAY RESULT IN HAZARDOUS POTENTIALS BETWEEN THE CHASSIS OF TWO OR MORE INSTRUMENTS OR EARTH GROUND.

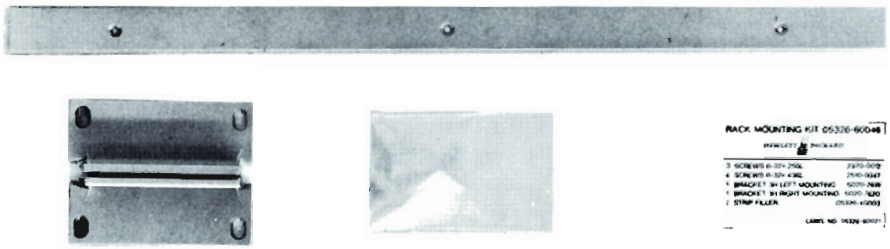
CAUTION

INPUT CIRCUITS AT THE 50 OHM INPUT CONNECTOR CAN BE DESTROYED WITH INPUT LEVELS EXCEEDING 1 WATT. PLEASE READ PARAGRAPH 3-21 REGARDING ACCEPTABLE INPUT LEVELS.

Figure 1-1. Model 5340A Frequency Counter, Rack Mount Kit, and Power Cord



Model 5340A



Rack Mount Kit



Power Cord

SECTION I

GENERAL INFORMATION

1-1. DESCRIPTION

1-2. The Hewlett-Packard Model 5340A Frequency Counter measures frequencies from 10 Hz to 18 GHz. Sensitivity is -30dBm (7.07 mV) from 10 Hz to 500 MHz, -35dBm (3.98 mV) from 500 MHz to 10 GHz and -25dBm (12.6 mV) from 10 GHz to 18 GHz. The counter makes direct measurements from 10 Hz to 250 MHz and uses an automatic transfer oscillator technique for frequencies above 250 MHz. Features include a single input connector for the entire frequency range, excellent AM and FM characteristics, eight-digit display, auto-amplitude discrimination, variable resolution from 1 Hz to 1 MHz, fast acquisition time, and wide dynamic range.

1-3. Electrical and mechanical specifications are listed in Table 1-3.

1-4. INSTRUMENT IDENTIFICATION

1-5. Hewlett-Packard instruments have a 2-section, 10-character serial number (0000A00000), located on the rear panel. The 4-digit serial prefix identifies instrument changes. The 5-digit number is the serial number of each instrument. If the serial prefix of your instrument differs from that listed on the title page of this manual, there are differences between this manual and your instrument.

1-6. For lower serial prefixes it will be necessary to backdate this manual to conform with your instrument. Refer to Section VII for a listing of the changes needed.

1-7. For higher serial prefix 5340A's, changes were made after this manual was published and it will be necessary to change this manual to conform with your instrument. A manual change sheet is included with this manual. If the change sheet is missing, contact your local Hewlett-Packard office.

1-8. APPLICATIONS

1-9. Since one input connector accepts all signals from 10 Hz to 18 GHz, the 5340A is particularly adaptable to automatic systems and high speed production testing. The high sensitivity is extremely useful in microwave measurements where signal levels are typically below the sensitivity of most counters. When the 5340A is equipped with Option 011, all front panel functions can be remotely programmed. In addition, the remote programming option allows for digital outputing and programming of the octave ranges of the internal phase lock loops. Octave range selection allows for measurements in a single frequency band to reduce the acquisition time to typically less than 25 milliseconds. Other options include rear panel input connectors Option 002, and high-stability time base Option 001.

1-10. OPTIONS

1-11. The 5340A can be ordered with the following options: Option 001, high-stability time base; Option 002, rear panel input connectors; and Option 011 remote programming and digital output. Table 1-3 lists the specifications for the options; Section VII describes field installation and gives an overall description of each option. Section II covers programming for Option 011.

1-12. EQUIPMENT SUPPLIED AND ACCESSORIES AVAILABLE

1-13. Table 1-1 lists equipment supplied and Table 1-2 lists accessories available.

Table 1-1. Equipment Supplied

Description	HP Part Number
Detachable Power Cord 7-½ ft. (231 cm) long	8120-1378
Rack Mount Kit (see Table 6-1 for a listing of parts)	05326-60046

Table 1-2. Accessories Available

Description	HP Part Number
ASCII to Parallel BCD Converter (Interfaces 5340A equipped with Option 011 to HP 5050A, 5050B, 5055A, or 562A Digital Recorders). Includes interconnect cable to 5340A.	K01-5340A
Digital Recorder (Use with K01-5340A above).	5055A
Interconnect Cable (Connects K01-5340A to 5050A/B, 5055A, or 562A Digital Recorders).	562A-16C
Interface Kit (For use with HP Computers and 5340A's equipped with Option 011).	59310A
Interface Kit (For use with HP 9820A Calculators and 5340A's equipped with Option 011).	11144A Option 20
ASCII Connecting Cables (Each cable end has stacked male and female type 57 connectors to allow multiple cable connections). 3 feet 6 feet 12 feet	 10631A 10631B 10631C
Extender Board, 5340A for Testing A4 through A15 (except A5).	05340-60047

Table 1-3. Specifications

SIGNAL INPUT

Input 1

Range: 10 Hz to 18 GHz.
Symmetry: Sine wave or square wave input (40% duty factor, worst case).
Sensitivity: -30dBm, 10 Hz to 500 MHz; -35dBm, 500 MHz to 10 GHz; -25dBm, 10 to 18 GHz.
Dynamic Range: 37dB, 10 Hz to 500 MHz; 42dB, 500 MHz to 10 GHz; 32dB, 10 GHz to 18 GHz.
Impedance: 50Ω.
VSWR: <2:1, 10 Hz to 12.4 GHz; <3:1, 12.4 to 18 GHz.
Connector: Precision Type N
Coupling: DC to load, AC to instrument.
Damage Level: +30dBm ±7V dc (total power not to exceed 1W)
Acquisition Time: <150 ms mean typical.

Input 2

Range: 10 Hz to 250 MHz direct count.
Sensitivity: 50 mV rms. 150 mV p-p pulses to 0.1% duty factor minimum pulse width 2 nsec.
Impedance: 1MΩ shunted by <25 pF. Option 002 (rear panel input) 1MΩ shunted by <100 pF. 50Ω termination (provided for front panel input) required to meet all specifications with Option 002 installed.
Connector: Type BNC female.
Coupling: AC.
Maximum Input:
10 Hz to 100 Hz 200V rms.
100 Hz to 100 kHz 20V rms.
100 kHz to 250 MHz 2V rms.

Automatic Amplitude Discrimination: Automatically selects the strongest of all signals present (within 250 MHz to 18 GHz phase-lock range), providing signal level is: 6 dB above any signal within 200 MHz; 10 dB above any signal within 500 MHz; 20 dB above any signal, 250 MHz—18 GHz.

Maximum AM Modulation: Any modulation index as long as the minimum voltage of the signal is not less than the sensitivity specification. For example, with a -10dBm input signal at 10 GHz, 94.5% modulation index will cause the signal to drop to -35dBm (4 mV) at its lowest amplitude and would be the limit of modulation.

TIME BASE

Crystal Frequency: 10 MHz.
Stability:
Aging Rate: $<\pm 3 \times 10^{-7}$ per month.
Short Term: $<5 \times 10^{-10}$ rms for 1 second averaging time.
Temperature: $<\pm 2 \times 10^{-6}$ over the range of 0°C to 50°C.
Line Variation: $<\pm 1 \times 10^{-7}$ for 10% line variation from nominal.
Output Frequency: 10 MHz ≥2.4V square wave (TTL compatible) available from rear panel BNC.

External Time Base: Requires 10 MHz approximately 1.5V p-p sine wave or square wave into 1 KΩ via rear panel BNC. Switch selects either internal or external time base.

Table 1-3. Specifications (Continued)

OPTIONAL TIME BASE (Option 001)

Option 001 provides an oven controlled crystal oscillator time base with an aging rate near that of a time standard. This option results in better accuracy and longer periods between calibration. A separate power supply keeps the crystal oven ON and up to temperature when the instrument is turned off as long as it remains connected to the power line.

Frequency: 10 MHz.
Aging Rate: $<\pm 5 \times 10^{-10}$/day after 24 hour warm-up[1] and $<1.5 \times 10^{-7}$/year.
Short Term Stability:
1×10^{-10} for 1 s avg. time
1×10^{-10} for 10 s avg. time.
2×10^{-10} for 100 s avg. time.
Line Variation: $<1 \times 10^{-10}$ for ±10% change from nominal. A 10% change will cause a frequency change of $<1 \times 10^{-8}$ for <2 min.
Temperature: $<7 \times 10^{-9}$ over 0°C to 50°C range.
Warmup: Within 5×10^{-9} of final[2] value 20 minutes after turn-on, at 25°C.
Frequency Adjustment Range: $>1 \times 10^{-6}$ (>±10 Hz from 10 MHz) with 18-turn control.
Frequency Adjustment: 1×10^{-9} (0.01 Hz) 18-turn control.

GENERAL

Accuracy: ±1 count ± time base error.
Resolution: Front panel switch selects 1 MHz, 100 kHz, 10 kHz, 1 kHz, 100 Hz, 10 Hz, or 1 Hz.
Display: Eight in-line long life display tubes with positioned decimal point and appropriate measurement units of kHz, MHz, or GHz.

"DIR" lamp indicates measurement is direct.

"LOCK" lamp indicates phase-lock has been achieved and measurement technique is indirect.

GATE" lamp indicates measurement is in progress.

"RMT" lamp indicates instrument is controlled via external or remote device.

"OVFL" indicates most significant digits will not be displayed. Digits displayed when "OVFL" is lighted are accurate ±1 count ± time base accuracy. "OVFL" is necessary for some high frequency measurements where resolution of 100 Hz, 10 Hz, or 1 Hz is required.

"*" lamp indicates Option 001 crystal oven time base is in the process of warming up (10-15 min. approximately). (The lamp will remain on for longer periods of time if the line voltage is low.)

Self-Check: Counts and displays 10 MHz for resolution chosen.

Sample Rate: Controls time between measurements. Continuously adjustable from 50 milliseconds typical to 5 seconds. Hold position holds display indefinitely. Reset button resets display to zero and activiates a new measurement.

Operating Temperature: 0° to 50°C.

Power: 115V or 230V ±10%, 50-60 Hz, 100 VA.

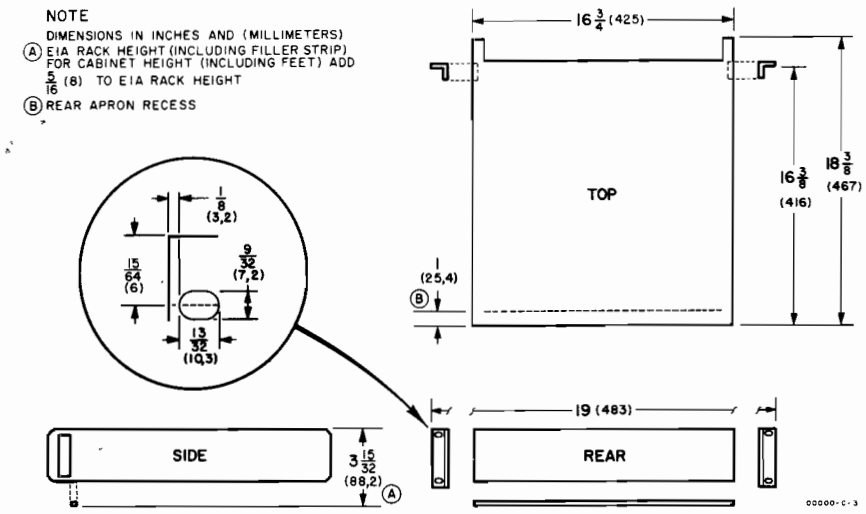
Weight: Net: 25 lb. (11, 3kg). Shipping: 31 lb. (14, 1kg).

[1]For oscillator off-time less than 24 hours.
[2]Final value is defined as frequency 24 hours after turn-on.

Table 1-3. Specifications (Continued)

GENERAL (CONTINUED)

Dimensions:



Accessories Furnished: Power cord 7½ ft (200 cm), NEMA plug (HP Part Number 8120-1378).

Accessories Available: 59310A Interface Kit for use with 5340A Option 011 and Hewlett-Packard computers.
11144A, Option 20 Interface Kit for use with 5340A Option 011 and Model 9820A Calculator.
ASCII (Option 011) to parallel BCD converter K01-5340A.

Rear Panel Connectors (Option 002)

This option provides input connectors on the rear panel. Input specifications remain the same. Input 1 (Type N) is on the rear panel in place of installation on the front panel. Input 2 (BNC) is available on the front and rear panels. Input impedance is reduced to 50Ω.

Remote Programming and Digital Output (Option 011)

Option 011 adds the capability of digital outputting and remote programming via a 24-pin, series 57 microribbon connector on the rear panel marked DIGITAL INPUT/OUTPUT. The TTL and DTL compatible, bi-directional bus consists of eight data lines plus seven status and control lines. Both program and output information are seven-bit ASCII (USA Standard Code for Information Interchange) characters. They are passed over the data lines on a character-serial basis.

Connector: 24-pin female Amphenol #57-20240-2, HP #1251-3283.
Mating connector male, Amphenol #57-10240, HP #1251-0389.

SECTION II

INSTALLATION AND REMOTE PROGRAMMING

2-1. INTRODUCTION

2-2. This section tells how to set up the 5340A Frequency Counter. Instructions for unpacking, inspecting, installing, and remote programming are included.

2-3. UNPACKING AND INSPECTION

2-4. If the shipping carton is damaged, inspect the counter for visible damage (scratches, dents, etc.). If the counter is damaged, notify the carrier and the nearest Hewlett-Packard Sales and Service Office immediately (offices are listed at the back of this manual). Keep the shipping carton and packing material for the carrier's inspection. The Hewlett-Packard Sales and Service Office will arrange for repair or replacement of your instrument without waiting for the claim against the carrier to be settled.

2-5. INSTALLATION REQUIREMENTS

CAUTION

BEFORE CONNECTING THE INSTRUMENT TO AC POWER LINES, BE SURE THAT THE LINE SELECTOR IS PROPERLY POSITIONED.

2-6. LINE VOLTAGE REQUIREMENTS. The 5340A is equipped with a line voltage switch to select 115-volt or 230-volt ac operation. Before applying power, the rear panel screwdriver-operated switch must be set to the correct position ("115" or "230" visible) and the correct fuse (as labeled on the rear panel) must be installed. See Figure 3-4 for rear panel features.

2-7. LINE FREQUENCY REQUIREMENTS. The counter will operate at line frequencies between 48 Hz and 66 Hz.

2-8. THREE CONDUCTOR POWER CABLE. To protect the operator, the counter uses a grounded three-conductor detachable power cable. The male connector end is a NEMA type connector, and the female connector end is a C.E.E. type connector that mates with the 5340A rear panel power connector. Connect the power cable to a power source receptacle with a NEMA grounded third conductor. If the line power receptacle is a standard two-pin type instead of the NEMA three-pin receptacle, use a two-to-three pin adaptor (HP Part No. 8120-1348) and connect the green pigtail on the adaptor to ground.

2-9. TEMPERATURE LIMITS. Maximum and minimum allowable operating temperatures are listed in Table 1-3. If these limits are exceeded at the installation site, auxiliary cooling or heating should be used to keep the environment within limits.

2-10. RACK INSTALLATION. The counter is ready for bench operation as shipped from the factory. Additional parts necessary for rack mounting are packaged with the instrument. To convert the instrument to rack installation, refer to Figure 6-1 for parts identification and proceed as follows:

a. Remove tilt stand MP14 by removing the two outside front feet MP11 from the bottom cover MP9. The feet are removed by pressing the foot-release button and sliding the foot toward the center of the instrument.

b. Remove the remaining three feet from the bottom cover.

c. Remove the two adhesive-backed trim strips MP1 from side frames MP3 and MP12.

d. Using the three screws provided, attach the filler strip from the rack mount kit along the front of bottom cover MP9.

e. Attach the flanges from the rack mount kit to the front end of side frames MP3 and MP12. Orient the larger corner notch toward the bottom of the instrument.

2-11. REPACKING FOR SHIPMENT

2-12. If it becomes necessary to reship a counter, good commercial packing should be used. Contract packaging companies in many cities can provide dependable custom packaging on short notice. Instruments should be packed securely in a strong corrugated container (350 lb/sq. in bursting test) with suitable filler pads between the instrument and container. Before returning instruments to Hewlett-Packard, contact the nearest Hewlett-Packard Sales and Service Office for instructions.

II

2-13. ENVIRONMENT DURING STORAGE AND SHIPMENT

2-14. Conditions during storage and shipment should normally be limited as follows:

a. Maximum altitude: 25,000 feet.
b. Minimum temperature: -40°F (-40°C).
c. Maximum temperature: +167°F (+75°C).

2-15. REMOTE PROGRAMMING AND DIGITAL OUTPUT

2-16. Option 011 adds remote programming and digital output capability to the 5340A Frequency Counter. These are accomplished with a bi-directional bus, via a 24-pin connector on the rear panel marked DIGITAL INPUT/OUTPUT. Associated with this connector are six slide switches used to address the instrument. A 5340A can be addressed to either send output data (TALK) or to accept program information (LISTEN). For the purposes of the Option 011 description, several terms are defined as follows:

a. A TALKER is the sender of information on the bus.

b. A LISTENER is the receiver or acceptor of information on the bus.

c. A CONTROLLER is an instrument that has the responsibility of managing the instruments connected to the bus. It is capable of addressing other instruments on the bus as TALKERS or as LISTENERS. It is a TALKER and may be a LISTENER.

d. "High" or "Ø" level of a line or switch is the relatively more positive signal level (≥2.4V).

e. "Low" or "1" level of a line or switch is the relatively less positive signal level (≤0.4V).

2-17. What Can Be Programmed

2-18. All front panel switch functions, except power, are programmable. Also, the 5340A's octave range and its output mode can be selected. In addition, a controller can command the 5340A to make a measurement by sending either a SAMPLE TRIGGER or RESET instruction. The controller can elect to give control to the front panel controls (LOCAL) or have the 5340A operate according to the information stored in its remote program storage cells (REMOTE). These are listed in Table 2-4 along with their associated codes.

2-19. When addressed to output, the 5340A sends a string of 16 ASCII characters (USA Standard Code for Information Interchange). It includes the measurement technique (direct or by using phase locked loops), overflow, eight data digits (blank display digits are outputed as 0's) E

followed by the appropriate multiplier to make the reading Hz, and a word terminator. Table 2-5 lists the order outputed and a description of the 16 output characters.

2-20. Bus Description

2-21. The 15-line bus consists of 8 data lines plus 7 control and status lines. Addresses, program and output information are communicated on the data lines. These are based on a character-serial, seven-bit ASCII code set.

2-22. Three control lines are used to execute the transfer of each byte of information on the data lines. They employ an interlocked "handshake" technique to pass information. This allows for asynchronous data transfer without timing restrictions being placed on either the 5340A or its controller. One line is driven by the 5340A to inform the controller of its status. The controller uses the three remaining lines to manage the 5340A's on the bus.

2-23. Several 5340A's can be connected to a common bus. The exact number depends on the drive capability of the controller (see LINE CHARACTERISTICS). A specific 5340A is made to send output data (TALK) or accept program data (LISTEN) by addressing it to do so.

2-24. All bus lines have been given names and mnemonic acronyms that convey the message being carried on that line. Each line is described below, followed by Table 2-1 which lists the relationship of the Attention line and the three handshake lines. Figure 2-1 shows the signal levels and timing relationship of the handshake and data lines. *ALL INSTRUMENTS CONNECTED TO THE BUS, INCLUDING THE CONTROLLER, MUST OBEY THESE DESCRIPTIONS.*

a. SERVICE REQUEST (SRQ)

By setting SRQ low, a 5340A indicates to the controller that it has completed a measurement and is ready to output. It drives SRQ only if programmed to "WAIT" in the output phase of its operating cycle until addressed to output. When programmed in the other output mode "output ONLY IF addressed", the 5340A sets SRQ high at all times. When SRQ is high, service is not being requested.

If two or more 5340A's are connected to the bus and one of them sets SRQ low, the controller must go through a process of elimination to determine which one requested service. It does this by addressing each one to TALK in an orderly manner. Only the 5340A with output information will respond.

b. REMOTE ENABLE (REN)

REN can be used by a controller to select remote or local (front panel) control of the operating of a 5340A. It works in conjunction with the information stored in the local-remote program storage cell (see Table 2-4). When REN is low and the 5340A has been sent an ASCII "0", it will operate according to the information previously stored in its remote-local program storage cells. It operates according to its front panel controls for all other combinations of these, i.e., REN is low and the remote-local storage cell contains an ASCII "N" or when REN is high regardless of what is stored in the remote-local cell. ASCII "N" is stored in the local-remote program storage cell when either the power is turned on or the RESET pushbutton is depressed.

c. INTERFACE CLEAR (IFC)

A controller uses IFC to clear the bus. When it sets IFC low for >100 μsec, all 5340A's immediately stop driving the data lines (DIO1 through DIO7) and handshake lines (RFD, DAC, and DAV). IFC will not clear a 5340A's service request (SRQ). A controller may drive IFC low at any time. When IFC is high, it has no effect on the bus operation. The 5340A monitors IFC at all times.

d. ATTENTION (ATN)

ATN is used by a controller to address a 5340A. The 5340A monitors ATN at all times. When ATN is low, all 5340A's connected to the bus interpret the information on the data lines as an address. They will handshake on the appropriate lines and will not drive the data lines. The 5340A requires the controller to hold ATN low for 1 μsec before it sets the handshake line DATA VALID low.

When ATN is high, a 5340A that has been addressed to TALK will drive the data lines. Those that have been addressed to LISTEN will interpret the information on the data lines as program data. Those that have not been addressed will not drive the data lines.

e. DATA LINES (EIGHT-BITS DIO1, DIO2...DIO8)

DIO1 through DIO7 carry data between the 5340A and its controller. The 5340A drives these lines when it has been addressed to TALK. The 5340A receives information on the data lines when addressed to LISTEN or when ATN is low. DIO8 is permanently terminated in the 5340A.

When a DIO line is high, the data bit is a logic zero (Ø).

When a DIO line is low, the data bit is a logic one (1).

f. READY FOR DATA (RFD)

RFD is the handshake line that indicates LISTENERS are ready to accept information on the data lines. Its relationship to the other handshake lines and ATN is shown in Figure 2-1 and Table 2-1.

RFD is driven by LISTENERS: all 5340A's when ATN is low and those instruments addressed to listen when ATN is high. It is sensed by TALKERS: the controller when ATN is low, and the instrument addressed to talk when ATN is high.

When RFD is high, all listeners are unconditionally ready for data. The TALKER may, at its own time, put a byte of information on the data lines and set DAV low. When RFD is low, one or more listeners are not ready for data.

When the controller sets ATN low, all 5340A's will set RFD to its valid state within 200 nsec. When the controller sets ATN high, all 5340A's that have not been addressed to listen will not drive RFD, those addressed to listen will set RFD to its valid state within 200 nsec.

The listener must not set RFD low until it senses DAV is low. It may do so before or at the same time that it sets DAC high. It must not return RFD high until it senses DAV is high and may do so after, or at the same time that it sets DAC low.

g. DATA ACCEPTED (DAC)

DAC is the handshake line that indicates the acceptance of information on the data lines. Its relationship to the other handshake lines and ATN is shown in Figure 2-1 and Table 2-1.

DAC is driven by LISTENERS: all 5340A's when ATN is low and those instruments addressed to listen when ATN is high. It is sensed by TALKERS: the controller when ATN is low and the instrument addressed to talk when ATN is high.

When DAC is high, all LISTENERS have unconditionally accepted the byte of information on the data lines and no longer need it. The TALKER may, at its own time set DAV high, remove that byte of information and continue. When DAC is low, one or more LISTENERS have not accepted the information on the data lines.

When the controller sets ATN low, all 5340A's will set DAC to its valid state within 200 nsec. When the controller sets ATN high, the 5340A's that have not been addressed to listen will not drive DAC, those addressed to listen will set DAC to its valid state within 200 nsec.

The listener must not set DAC low until it senses DAV is high. It may do so before or at the same time that it sets RFD high. It must not return DAC high until it senses DAV is low and may do so after or at the same time that it sets RFD low.

h. DATA VALID (DAV)

DAV is the handshake line that indicates the validity of information on the data lines. Its relationship to the other handshake lines and ATN is shown in Figure 2-1 and Table 2-1.

It is driven by TALKERS: the controller when ATN is low and by the instrument addressed to talk when ATN is high. It is sensed by LISTENERS: all 5340A's if ATN is low and by the instruments addressed to listen when ATN is high.

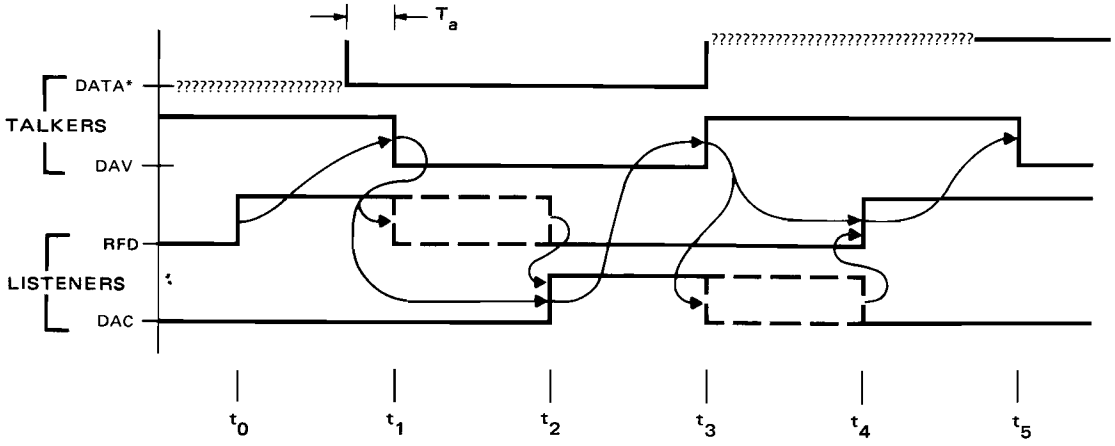
When DAV is low, the states of data lines DIO1 through DIO7 are unconditionally valid and may be accepted by all listeners at their own time. To allow for cable rise time, ringing, etc., the 5340A, when addressed to TALK, does not set DAV low until 2 μsec after it has placed valid data at its output connector. It assumes that the controller has taken similar precautions. DAV can only be driven low if RFD and IFC are high. When DAV is high, the information on the data lines is not valid. DAV cannot be set high unless DAC is high and RFD is low.

Table 2-1. Relation of ATN and the Handshake Lines (RFD, DAC, DAV)

STATE OF ATTENTION LINE (ATN)	READY FOR DATA (RFD)		DATA ACCEPTED (DAC)		DATA VALID (DAV)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
ADDRESS MODE — LOW	One or more 5340A's not ready for data	All 5340A's are ready for data	One or more 5340A's has not accepted the data	All 5340A'S have accepted the data	Controller has valid data on lines	Controller's data not valid
ADDRESS MODE — LOW	(1) Driven by all 5340A's (2) Sensed by controller (3) 5340A's drives to its valid state within 200 ns of ATN going low				(1) Driven by controller (2) Sensed by 5340A's	
DATA MODE — HIGH	One or more LISTENERS are not ready for data	All addressed LISTENERS are ready for data	One or more LISTENERS have not accepted data	All addressed LISTENERS have accepted the data	The addressed TALKER has valid data on lines	The addressed TALKER'S data not valid
DATA MODE — HIGH	(1) Driven by ALL instruments addressed to LISTEN (2) Sensed by the instrument addre ssed to TALK (3) All instruments not addressed w ill not drive				(1) Driven by the instruments addressed to TALK (2) Sensed by ALL instruments addressed to LISTEN	

Figure 2-1. Handshake Timing

SEQUENCE REQUIREMENTS OF THE THREE WIRE HANDSHAKE



EVENTS

t_0 : Listener becomes ready to accept data.

t_1 : Talker has put data on the lines.

t_2 : Talker indicates data is valid.

t_3 : Listener has accepted the data and no longer requires it held valid.

t_4 : Talker indicates the data is no longer valid and may change it.

t_5 : Listener indicates it is ready for new data and a new cycle begins (equivalent to t_0).

T_a : Time data is put on lines before DAV is set low.

*A composite of the DIO1 through DIO7 lines for illustrative purposes.
(The curved lines indicate interlocked signal sequence.)

2-25. Data Transfer

2-26. Transfer of data on the bus is asynchronous. It places no restrictions on the data rates of instruments connected to the bus. The timing and levels required to transfer a byte of information on the data lines are shown in Figure 2-1. Transfer is under the control of three handshake lines DAV, RFD, and DAC. The TALKER (sender of data) drives DAV (Data Valid) and the LISTENER (acceptor of data) drives both RFD (Ready for Data) and DAC (Data Accepted).

2-27. The transfer of a byte is initiated by the LISTENER signifying it is ready for data by setting RFD high. When the TALKER recognizes RFD is high and has placed valid data on the data lines it sets DAV low. When the LISTENER senses that DAV is low and is finished using the data, it sets DAC high. Notice that the assertive or action state of both RFD and DAC is high. Since all instruments on the bus have their corresponding lines connected together (e.g., RFD), all LISTENERS must be in a high state before that line goes high. This wire-AND situation allows a TALKER to recognize when the slowest listener has accepted a byte of data and is ready for the next byte.

2-28. Let's look at the timing of the transition to the non-assertive state for these lines. DAV may be driven high by the TALKERS after it recognizes that DAC is high. RFD may be set low as soon as the LISTENER recognizes that DAV has been set low. The 5340A requires RFD to be set low no later than 50 nsec after the LISTENER sets DAC high. When the 5340A is a listener it drives RFD low at the same time it sets DAC high. The timing of DAC is similar to RFD, i.e., it may go low as soon as DAV is high and it must be low no later than 50 nsec after RFD is driven high. The 50 nsec permits a controller, when working with only one 5340A on the bus, to generate either DAC or RFD and invert it to get the other.

2-29. Addressing the 5340A

2-30. Before a 5340A can send output data or accept program information it MUST be addressed to TALK or LISTEN. The method used to address it depends on the rear panel switch marked TALK ALWAYS — ADDRESSABLE (See Figure 2-2). When in the TALK ALWAYS position, the 5340A is addressed to TALK - it outputs ONLY. It operates according to the front panel controls and outputs each measurement. This position is intended for operation where there is no controller, e.g., with a digital recorder. When the rear panel switch is set to ADDRESSABLE, the 5340A can either be:

a. Sent program information by a controller and the measured results are observed visually, or

b. Both program and output information are passed on the bus managed by a controller.

2-31. Addresses are communicated on the data lines. When the controller sets ATN low, all 5340A's interpret the information on data lines, DIO1 through DIO5 as an address. During this time, the signal levels on DIO6 and DIO7, designate whether the addressed 5340A is to communicate as a TALKER or a LISTENER.

DIO7	DIO6	DIO5	DIO4	DIO3	DIO2	DIO1	
1	Ø	A_5	A_4	A_3	A_2	A_1	- TALK ADDRESS*
Ø	1	A_5	A_4	A_3	A_2	A_1	- LISTEN ADDRESS*
Ø	Ø	X	X	X	X	X	- Ignored by 5340A
1	1	X	X	X	X	X	when ATN is low

A_i - Address switches on rear panel

X - Don't care

* - The clear address characters (11111) not allowed.

2-32. The thirty-one (31) possible LISTEN and TALK address characters and their signal levels are shown in Tables 2-2 and 2-3. A unique character is selected for each 5340A with the five (5) slide switches on the rear panel marked ADDRESS (A_5, A_4, A_3, A_2, A_1) (see Figure 2-2). These switches may be set to either Ø or 1 (Ø represents a high level and 1 a low level).

2-33. Two characters are reserved for the special function of clearing or removing a 5340A from the active state of an addressed TALKER or LISTENER. The 5340A is cleared as a LISTENER if it is sent an ASCII "?" while ATN is low. The 5340A is cleared as a TALKER if another instrument is addressed to TALK or it is sent an ASCII "_" (underscore) while ATN is low. It is cleared as either a TALKER or LISTENER when IFC is low.

Table 2-2. Talk and Listen Addresses

CODIGO STANDARD EN E.U.A. PARA INFORMACION DE INTERCAMBIO

USA STANDARD CODE FOR INFORMATION INTERCHANGE

BITS				b_7 b_6 b_5	$0\,0\,0$	$0\,0\,1$	$0\,1\,0$	$0\,1\,1$	$1\,0\,0$	$1\,0\,1$	$1\,1\,0$	$1\,1\,1$
b_4	b_3	b_2	b_1	COLUMN / ROW	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	¦
1	1	0	1	13	CR	GS	–	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	←	o	DEL
							ADDRESS	CLEAR ADDRESS	ADDRESS	CLEAR ADDRESS		
							LISTEN		TALK			

STANDARD CODE		DATA LINE		ADDRESS SWITCH
b_1	≡	DI01	≡	A1
b_2	≡	DI02	≡	A2
b_3	≡	DI03	≡	A3
b_4	≡	DI04	≡	A4
b_5	≡	DI05	≡	A5

2-34. Example of Setting an Address

2-35. Except for ? and _ (underscore), any talk-listen address combination in the shaded areas of Table 2-2 can be used. Selecting a particular listen address will result in a corresponding talk address or vice versa. For example, if the ASCII # symbol is chosen for the listen address, then ASCII "C" would be the corresponding talk address. This can be seen in Tables 2-2 and 2-3 and as follows:

DIO7	DIO6	DIO5	DIO4	DIO3	DIO2	DIO1	← BUS DATA LINES
b_7	b_6	b_5	b_4	b_3	b_2	b_1	← ASCII BITS
0	1	0	0	0	1	1	← LISTEN ADDRESS = #
		A_5=0	A_4=0	A_3=0	A_2=1	A_1=1	← ADDRESS SWITCHES
1	0	0	0	0	1	1	← TALK ADDRESS = C

2-36. Note that for a given setting of the address switches, the listen address is determined by driving DIO7 to 0 and DIO6 to 1. The talk address is implemented by driving DIO7 to 1 and DIO6 to 0. Table 2-3 lists the available address codes.

2-37. Other examples of 5340A talk listen addresses are as follows:

5340A ADDRESS SWITCH SETTINGS					RESULTANT LISTEN ADDRESS	RESULTANT TALK ADDRESS
A_5	A_4	A_3	A_2	A_1		
0	0	0	1	1	#	C
0	0	1	0	0	$	D
0	1	0	1	0	*	J
1	1	1	0	0	<	\
1	0	0	1	1	3	S

2-38. Line Characteristics

2-39. All 15 bus lines are designed to be compatible with TTL or DTL integrated circuits. Since wire-ANDing is used on some lines, the TTL line drivers must be either open collector or tri-state. Each line in the 5340A is terminated in a resistor divider consisting of a 3K connected to 5V and a 6.2K connected to ground. All receivers are hex inverters (SN 7404N or equivalent) and the drivers are open collector NAND gates (SN 7438N or equivalent). These may be put into four groups:

a. IFC, ATN, and REN are receivers only. They require -3.2 mA maximum at 0.4V to drive.

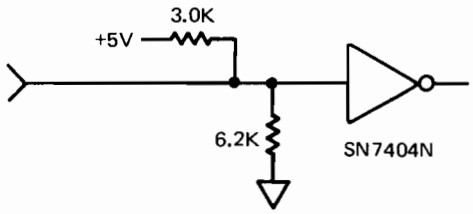
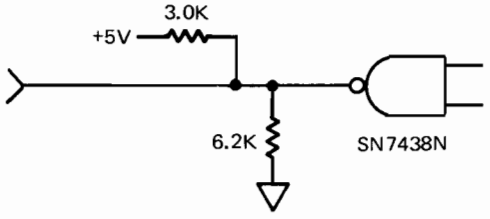


Table 2-3. Available Address Codes

DIO7 DIO6	DATA LINES DIO5	DIO4	DIO3	DIO2	DIO1	TALK ADDRESS	LISTEN ADDRESS
	ADDRESS SWITCHES A5	A4	A3	A2	A1		
See Note 2	0	0	0	0	0	@	SP
	0	0	0	0	1	A	!
	0	0	0	1	0	B	"
	0	0	0	1	1	C	#
	0	0	1	0	0	D	$
	0	0	1	0	1	E	%
	0	0	1	1	0	F	&
	0	0	1	1	1	G	'
	0	1	0	0	0	H	(
	0	1	0	0	1	I	)
	0	1	0	1	0	J	*
	0	1	0	1	1	K	+
	0	1	1	0	0	L	,
	0	1	1	0	1	M	-
	0	1	1	1	0	N	.
	0	1	1	1	1	O	/
	1	0	0	0	0	P	0
	1	0	0	0	1	Q	1
	1	0	0	1	0	R	2
	1	0	0	1	1	S	3
	1	0	1	0	0	T	4
	1	0	1	0	1	U	5
	1	0	1	1	0	V	6
	1	0	1	1	1	W	7
	1	1	0	0	0	X	8
	1	1	0	0	1	Y	9
	1	1	0	1	0	Z	:
	1	1	0	1	1	[	;
	1	1	1	0	0	\	<
	1	1	1	0	1	]	=
	1	1	1	1	0	^	>

NOTES: 1. Changing the listen address changes the talk address and vice versa.
2. Only first five bits of binary code are given. Sixth and seventh bits determine whether address is Talk or Listen. 01 for Listen, 10 for Talk.

b. SRQ is output only: It is capable of sinking 45 mA at +0.4V.



c. Data lines (DIO1 through DIO7) and the handshake lines (RFD, DAC, and DAV) are bi-directional. They are a combination of a and b, i.e., when a TALKER, capable of sinking 45 mA at +0.4V. When a LISTENER, requires -3.2 mA maximum at 0.4V to drive.

d. DIO8 is connected to a similar divider and is always at 3.2V at 2K impedance.

2-40. Hardware

2-41. The 5340A's digital INPUT/OUTPUT connector is on the rear panel (Figure 2-2). Pin connections to this Type 57 Microribbon connector are shown in Figure 2-3.

2-42. Cables of three different lengths are available for connecting a 5340A to a controller or to another 5340A:

a. 3 feet long HP Part No. 10631A.
b. 6 feet long HP Part No. 10631B.
c. 12 feet long HP Part No. 10631C.

2-43. These have one overall shield to reduce susceptibility to external noise. The cables use a mixture of individual wires and twisted pairs to reduce crosstalk. Both ends are identical. They are terminated in two 24-pin piggy back connectors; one male and one female. This termination permits several cables to be connected to the same 5340A. Pin connections of these connectors are shown in Figure 2-4. There is a restriction of no more than 12-feet between the first two instruments in the system and 6-feet between the remaining instruments. The 5340A can drive a maximum of 50-feet of this cable.

2-44. Programming the 5340A

2-45. The 5340A has a group of storage cells that are used to store program information. They are used ONLY when a controller has the 5340A operating under remote control. The ASCII characters that can be stored in each cell and their relationship to the 5340A's operation are shown in Table 2-4. (Refer to Table 2-2 for signal levels.)

Figure 2-2. 5340A Rear Panel

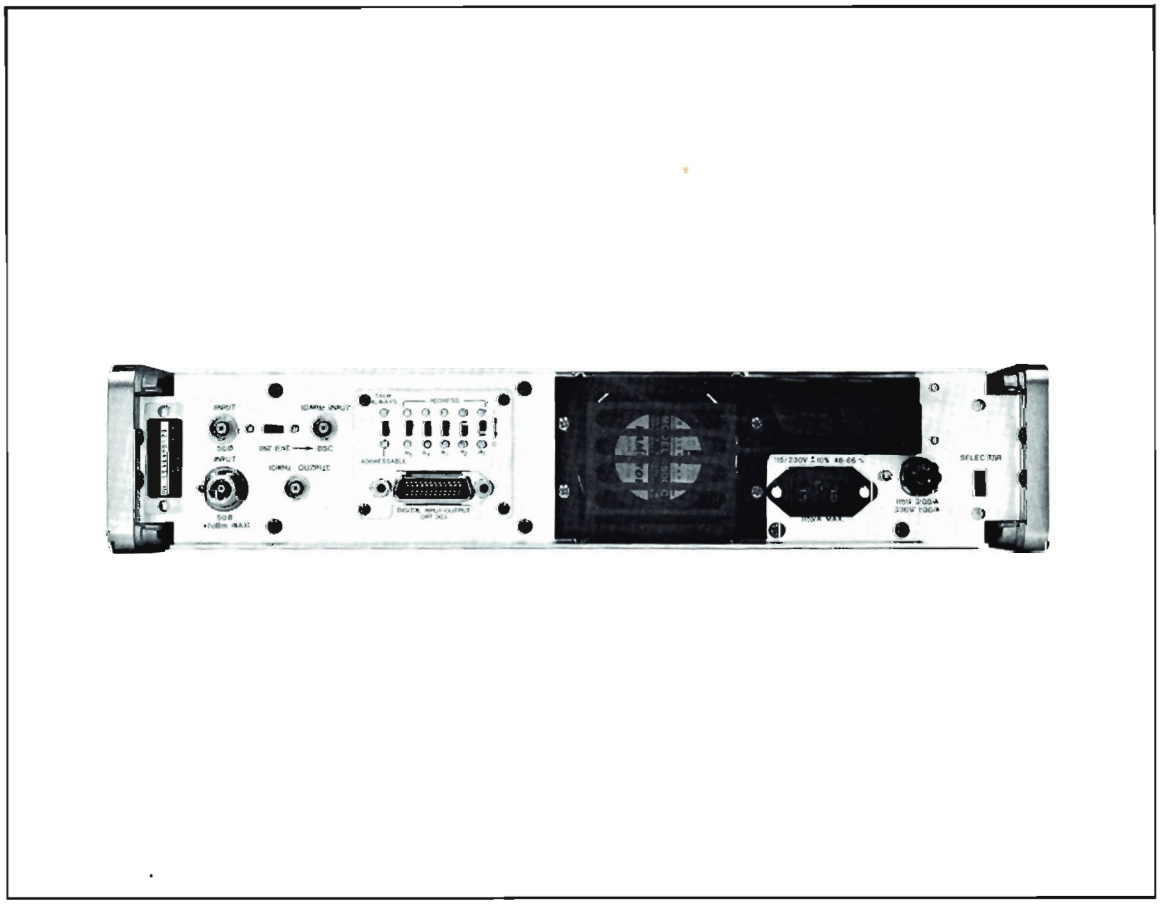


Figure 2-3. 5340A Digital Input/Output

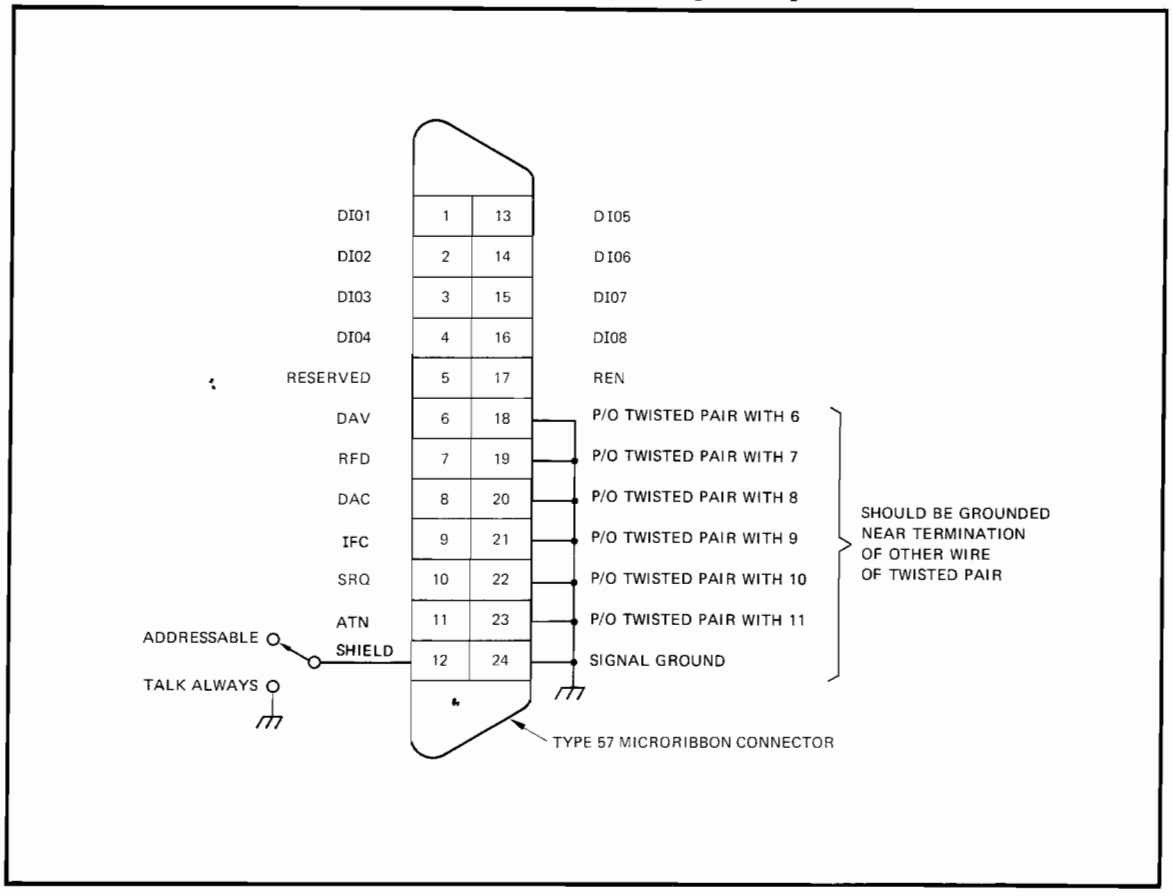
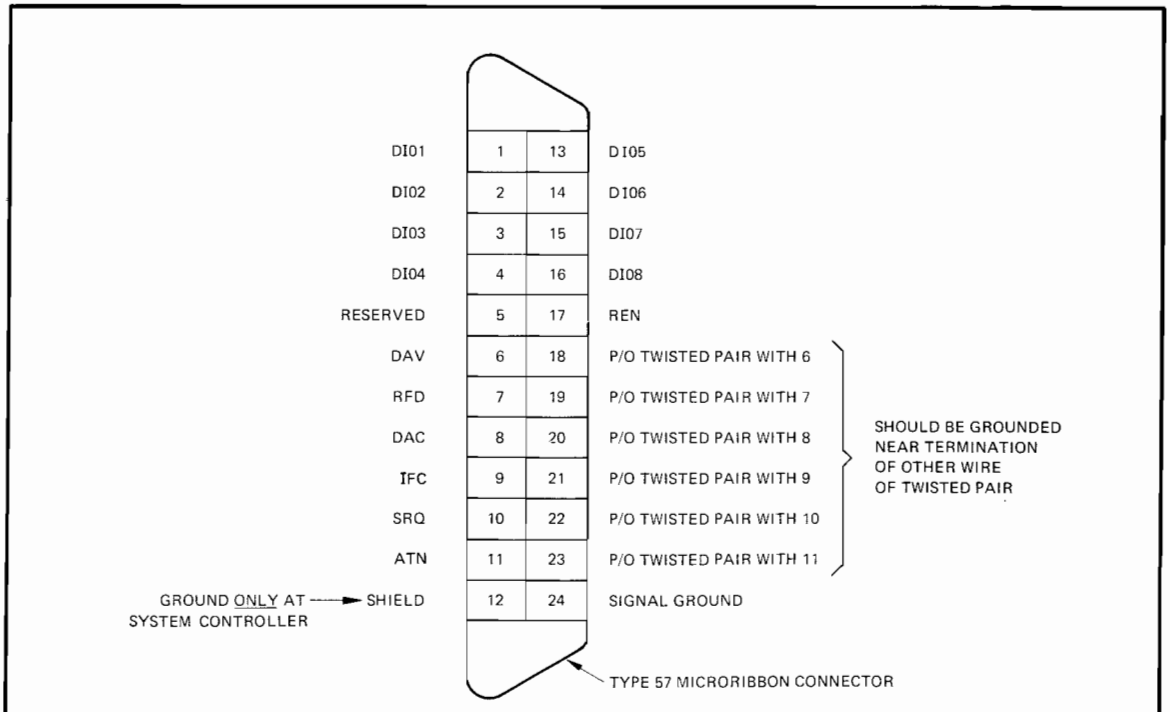


Figure 2-4. Pin Connections of the 10631A, B, C Cables



NOTE 1: Pins 18 through 23 should be grounded near the termination of the other wire of its twisted pair. Pin 12 is grounded ONLY at the controller.

Table 2-4. 5340A Program Code Set

Resolution	Hz	ASCII*	Binary							Octal
			B_7	B_6	B_5	B_4	B_3	B_2	B_1	
1	10^0	Ø	0	1	1	0	0	0	0	060
10	10^1	1	0	1	1	0	0	0	1	061
100	10^2	2	0	1	1	0	0	1	0	062
1K	10^3	3	0	1	1	0	0	1	1	063
10K	10^4	4	0	1	1	0	1	0	0	064
100K	10^5	5	0	1	1	0	1	0	1	065
1M	10^6	6	0	1	1	0	1	1	0	066
Ranges										
10 Hz - 250 MHz (hi Z)		S	1	0	1	0	0	1	1	123
Check		U	1	0	1	0	1	0	1	125
250 MHz - 18 GHz (50Ω)		T	1	0	1	0	1	0	0	124
10 Hz - 18 GHz (50Ω)		P	1	0	1	0	0	0	0	120
Octave Ranges (use with T&P only)										
Auto		@	1	0	0	0	0	0	0	100
≥8 GHz		A	1	0	0	0	0	0	1	101
4 GHz - 8 GHz		B	1	0	0	0	0	1	0	102
2 GHz - 4 GHz		C	1	0	0	0	0	1	1	103
1 GHz - 2 GHz		D	1	0	0	0	1	0	0	104
500 MHz - 1 GHz		E	1	0	0	0	1	0	1	105
250 MHz - 500 MHz		F	1	0	0	0	1	1	0	106
10 Hz - 250 MHz		G	1	0	0	0	1	1	1	107
Sample Rate										
Internal Sample Rate		J	1	0	0	1	0	1	0	112
Hold		K	1	0	0	1	0	1	1	113
SAMPLE TRIGGER (measure)		I	1	0	0	1	0	0	1	111
RESET		H	1	0	0	1	0	0	0	110
OUTPUT MODES										
ONLY IF addressed		L	1	0	0	1	1	0	0	114
WAIT until addressed		M	1	0	0	1	1	0	1	115
Local-Remote										
Local (front panel) control		N	1	0	0	1	1	1	0	116
Remote (program storage cell) control		O	1	0	0	1	1	1	1	117
RESET PUSHBUTTON/POWER UP conditions are Ø, P, @, J, L. N										
*Signal levels also shown in Table 2-2.										

2-46. The program storage cells are loaded with a pre-determined set of conditions when either the front panel RESET pushbutton is depressed or when power is turned on. The initial conditions are listed in Table 2-4 under RESET PUSHBUTTON/POWER UP. Notice that each time either the RESET pushbutton is depressed or power is turned OFF - then ON, the 5340A operates according to its front panel controls.

a. Resolution and Range - Relate directly to the front panel controls and are self-explanatory. For example, ASCII "S" selects the 10 Hz - 250 MHz range and the BNC input connector.

b. Octave Ranges - The 5340A can be made to operate in a particular octave range by sending it the proper ASCII character. This feature can save up to 110 msec of search time when the signal to be measured is in one of the octave ranges. When a controller wants to take control of the 5340A's operation, it only changes those cells where initial conditions are different than the desired program. Program information may be sent in any sequence. The 5340A will not make a measurement if there is either no signal in the selected range or there is one with a larger amplitude in some other range. When AUTO is selected, the 5340A automatically sweeps through all ranges until it finds the signal to be measured.

c. Sample Rate Modes

(1) Internal Sample Rate - Sample rate time is determined by the 5340A's SAMPLE RATE control.

(2) Hold - The 5340A waits in the Sample Rate phase of its operating cycle until made to continue by either a SAMPLE TRIGGER instruction, a RESET instruction or the front panel RESET pushbutton is depressed.

d. Sample Trigger Instruction - Is intended to be used in conjunction with the SAMPLE RATE HOLD mode. It makes the 5340A leave the Sample Rate HOLD phase of its operating cycle and make a measurement. Sample trigger does not reset the display nor does it initialize the phase locked loops (make the 5340A go through its search procedure). The 5340A will ignore the Sample Trigger instruction unless it is waiting in the Sample Rate phase of its operating cycle.

e. Reset Instruction - Clears the display, initializes the phase locked loops and starts a new measurement procedure. It may be sent at any time in the 5340A's operating cycle. A reset instruction does not initialize the remote program storage cells as does the front panel RESET pushbutton. The 5340A obeys the Reset instruction if addressed to LISTEN whether in local or remote operation.

f. Output Modes - A 5340A outputs in one of two modes providing it has been addressed to TALK.

(1) ONLY IF addressed (ASCII "L" stored in the program storage cell). The 5340A will output each measurement if it has been addressed to TALK. If not so addressed, it bypasses the entire output phase of its operating cycle.

(2) WAIT until addressed (ASCII "M" stored in this program storage cell). The 5340A will make a measurement then wait in the output phase of its operating cycle until it is addressed to TALK. As soon as it is so addressed, it will output and continue according to the information in its program storage cells.

Notice that the 5340A ALWAYS outputs when it reaches the output phase of its operating cycle IF it has been addressed to TALK. When programmed ONLY IF, the 5340A continues to go through its operating cycle bypassing the Output phase until addressed to TALK. When programmed to WAIT, the 5340A will stop at its output phase and stay there until addressed to TALK.

g. Local-Remote

(1) Local - The 5340A operates according to its front panel controls.

(2) Remote - Used in conjunction with the control line REN (Remote Enable) to have the 5340A operate according to the information in its program storage cells.

h. Reset Pushbutton/Power Up

When power is first turned on (Power UP) or the front panel RESET pushbutton is depressed, the 5340A performs according to its front panel controls. However, it has stored

in its remote programming storage cells the initial conditions of Ø, P, @, J, L, and N. There are:

Ø - 1 Hz resolution
P - 10 Hz to 18 GHz range
@ - AUTO (sweeps through all ranges)
J - Internal Sample Rate
L - Output ONLY IF addressed
N - Local operation

When taking remote control of the 5340A it is necessary to change only those cells that are different from the above. For example, if the 5340A is to be used under remote control; 1 Hz resolution, 10 Hz to 18 GHz range, automatic searching, sample rate HOLD and WAIT in output phase until addressed; it is only necessary to change the ASCII "J" to "K", "L" to "M", and "N" to "0". These changes can be made in any order.

2-47. What is Outputted

2-48. When addressed to TALK the 5340A outputs a string of 16 ASCII characters provided there is an addressed LISTENER on the bus. The handshake routine, necessary for passing information on the data lines, cannot be started unless there is both an addressed LISTENER and TALKER on the bus. The LISTENER must be able to recognize LF (line feed) as the end of the 5340A's output data. As soon as the LISTENER accepts LF (sets DAC high) the 5340A leaves the output phase and continues through its operating cycle.

2-49. The 16 output characters, their description and the order in which they are outputted are shown in Table 2-5. Refer to Table 2-2 for signal levels.

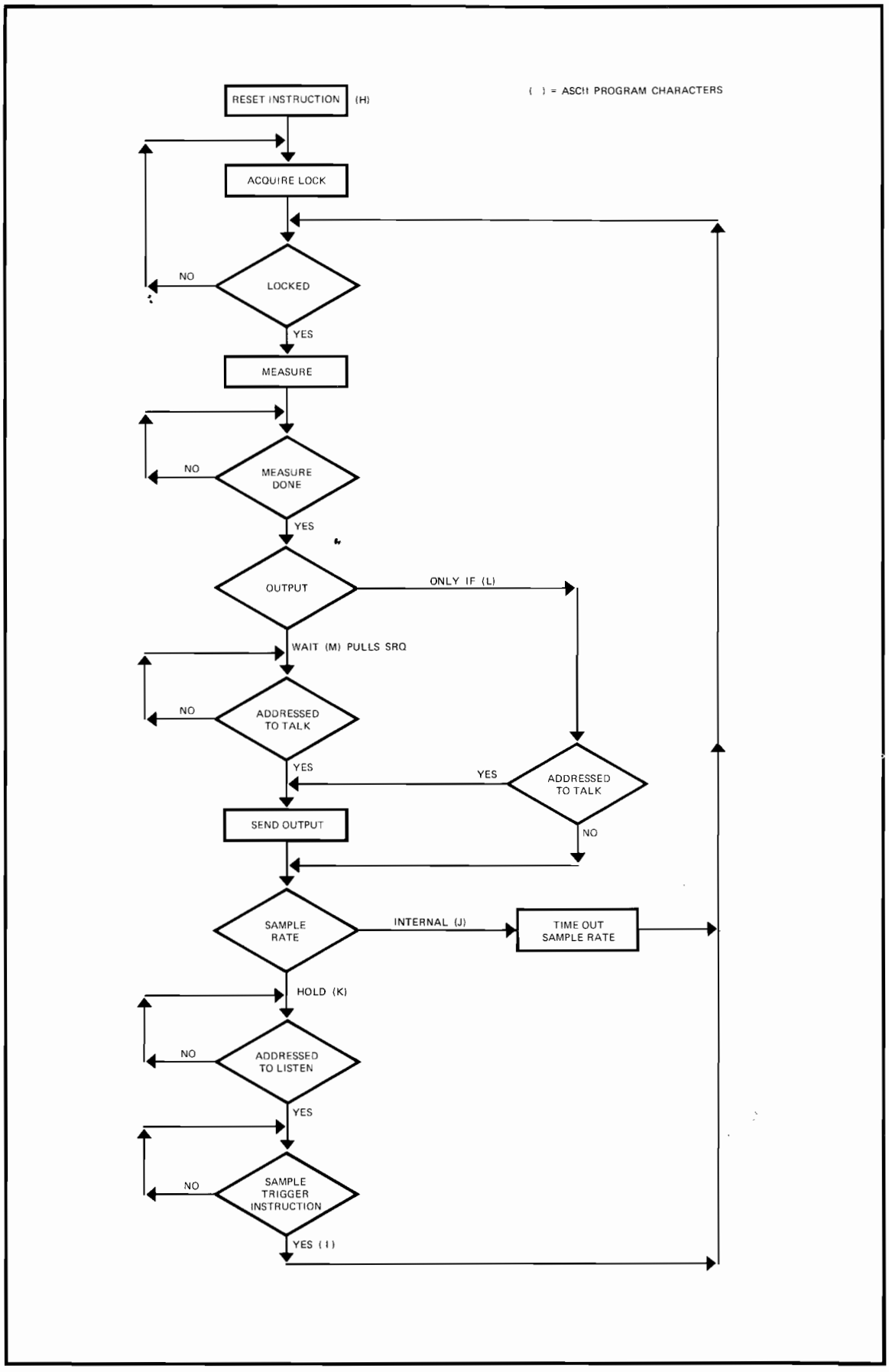
Table 2-5. 5340A Output Code Set

ORDER OUTPUTTED	CHARACTER	DESCRIPTION
1	D/L	D - measurement made direct or L - measurement made using phase locked loops
2	O/SP	O - 5340A's display has overflowed or SP - Space (0 100 000 binary, 040 octal)
3	SP	Space
4 thru 11	Ø - 9	Digits Ø thru 9 (blank display digits outputted as Ø) most significant digit first
12	E	Power of 10 exponent to follow
13	+	Exponent is positive (0 101 011 binary, 053 octal)
14	Ø - 6	One digit exponent
15	CR	Carriage return (0 001 101 binary, 015 octal)
16	LF	Line feed (used as a word terminator) (0 001 010 binary, 012 octal)

2-50. Modes of Operation

2-51. The 5340A has several remote operating modes. They depend on the Sample Rate and Output modes and the method used to initiate a measurement procedure. This section includes a description of these modes, a simplified flow chart (Figure 2-5) showing all operating modes and a sample program.

Figure 2-5. 5340A Remote Operation



2-52. The two principal modes of remote operation based on the Sample Rate and Output modes are described in (a) and (b) below. Modes (c) and (d) are possible by selecting the remaining combinations of the Sample Rate and Output modes.

a. Internal Sample Rate (J) and Output ONLY IF (L)

(1) If NOT addressed to TALK the 5340A makes measurements continuously at a rate determined by its Sample Rate time plus measurement time. It skips the output phase of its operating cycle.

(2) If 5340A is addressed to TALK, it no longer skips its output phase. The next and all subsequent measurements are outputted.

b. Sample Rate HOLD (K) and WAIT until addressed (M) the 5340A sequence is:

(1) Addressed to LISTEN.

(2) Instructed to make a measurement.

(3) Makes a measurement and stops in its output phase.

(4) Addressed to TALK.

(5) Outputs and stops in its Sample Rate phase.

(6) Addressed to LISTEN.

(7) Instructed to make measurement, then repeats 3 through 6.

c. Internal Sample Rate (J) and WAIT until addressed (M) the 5340A:

(1) Makes a measurement and stops in its output phase.

(2) Is addressed to TALK.

(3) Outputs, goes through its sample rate, and makes another measurement and if:

(a) Still addressed to TALK it repeats (3).

(b) Not addressed to TALK it stops in its output phase and waits until so addressed then repeats (3).

d. Sample Rate HOLD (K) and Output ONLY IF addressed (L) the 5340A is:

(1) Addressed to LISTEN.

(2) Instructed to make a measurement.

(3) Makes the measurement and if:

(a) Addressed to TALK by the end of the measurement phase it outputs and stops in the Sample Rate phase until (1) and (2) are repeated.

(b) Not addressed to TALK by the end of the measurement phase it skips output and stop in the Sample Rate phase until (1) and (2) are repeated.

2-53. Starting a Measurement Procedure

2-54. When operating the 5340A under remote control, a measurement procedure may be initiated by sending a Reset or Sample Trigger Instruction or by letting its sample rate time run out.

a. Internal Sample Rate (J) - a measurement starts at the end of sample rate time.

b. Reset Instruction (H):

(1) Can be given at any time during a 5340A's operating cycle.

(2) Does not change the information in the program storage cells.

(3) Clears the display.

(4) Initializes the phase locked loops forcing a new search procedure.

(5) Starts measurement phase of the 5340A's operating cycle.

c. Sample Triggers Instruction (I):

(1) Can be given only if the 5340A is stopped in the Sample Rate phase of its operating cycle. If given at any other time it will be ignored by 5340A.

(2) Does not change the information in the program storage cells.

(3) Does not clear the display.

(4) Does not initialize the phase locked loops, i.e., the 5340A does not go through a search procedure unless it has lost phase lock since the previous measurement.

(5) Starts the measurement phase of the 5340A's operating cycle.

2-55. Examples of Programming

2-56. Assume that it is desired to program a 5340A for a measurment of approximately 3.5 GHz to a 1 kHz resolution. In addition, it is desired to instruct the 5340A to make a measurement and subsequently output when so instructed. One method of programming this is shown in Table 2-6. (Assume the 5340A listen address is ASCII "#" and the talk address is ASCII "C".)

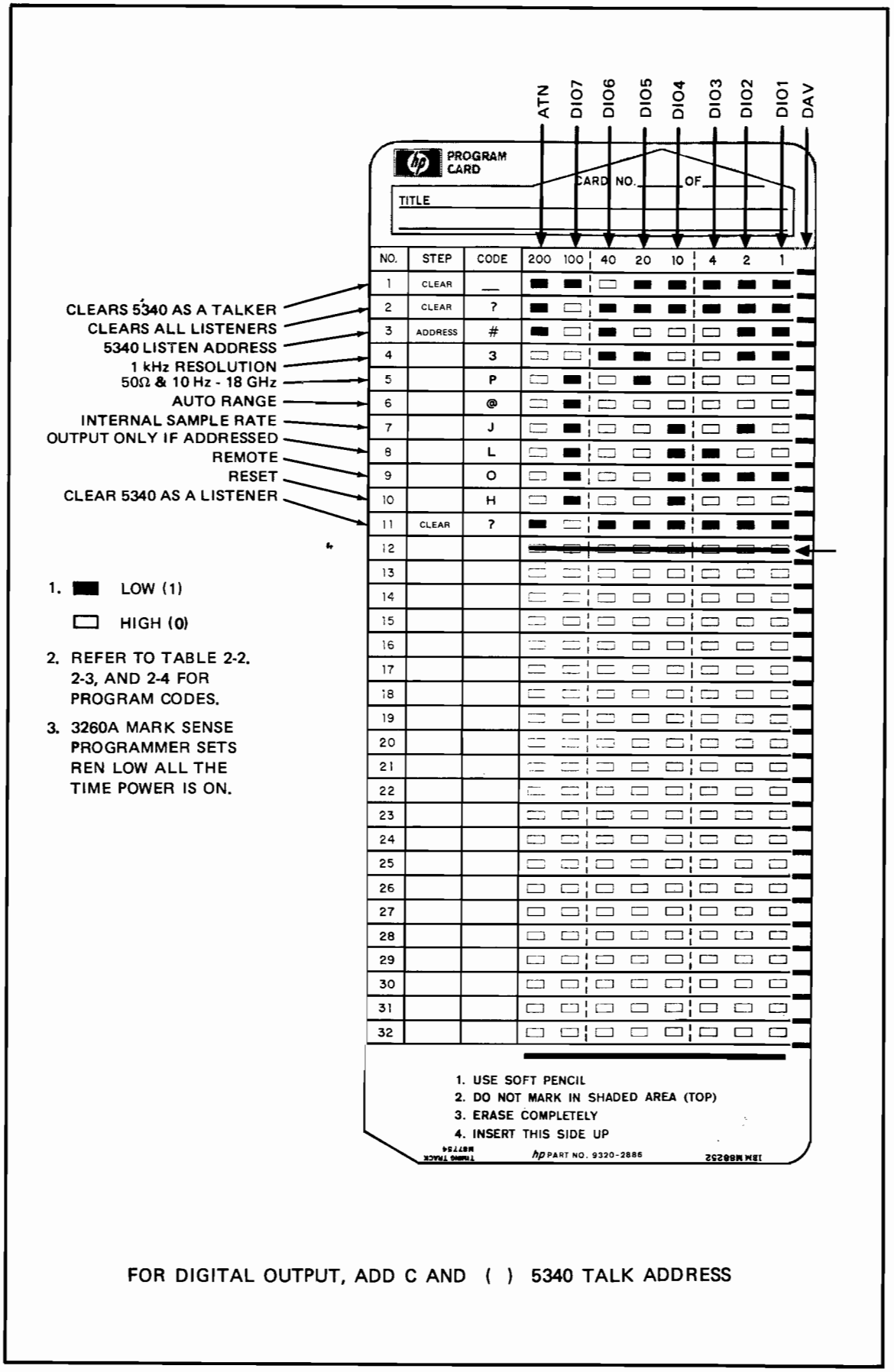
2-57. Another example of programming is with a mark sense card reader. Assume that it is desired to program a 5340A using a 3260A Mark Sense Programmer for an automatic measurement to a 1 kHz resolution (where a digital output is not required). Figure 2-6 shows the marked program card.

Table 2-6. 5340A Programming Example

Sequence	Control and Status Lines				Data Lines ASCII Codes	Description of Program Sequence
	SRQ	IFC	REN	ATN		
1	H	H	H*	L	_ (underscore) or controller's talk address	Clears 5340A as a TALKER
2					?	Clears all LISTENERS
3					#	5340A LISTEN ADDRESS is on Data Lines
4				H		5340A is addressed to LISTEN
5					3 T C K M O	1 kHz resolution is selected 250 MHz to 18 GHz range selected 2 to 4 GHz range selected Sample Rate HOLD selected WAIT until addressed to TALK 5340A remote-local cell loaded with REMOTE } Loading program cell operation (can be loaded in any order)
6			L			5340A in REMOTE control (operates according to Sequence 5)
7					H	RESET and start search procedure
8	L					5340A has completed measurement and is ready to output
9				L	C	5340A TALK ADDRESS is on Data Lines
10					?	Clears all LISTENERS
11					Listener's Address	LISTENER'S ADDRESS on Data Lines
12				H		LISTENER'S are addressed, 5340A addressed to TALK, it OUTPUTS and waits in the SAMPLE RATE phase of its operating cycle
13	H	H		L	_ (underscore) or controller's talk address	Clears 5340A as a TALKER
14					?	Clears all LISTENERS
15					#	5340A LISTEN ADDRESS is on Data Lines
16				H		5340A is addressed to LISTEN
17					I	Sample Trigger Instruction initiates a new measurement
Repeats from Sequence 8						

*REN may be low during entire example, but must be low before Step 7.

Figure 2-6. Example Program Card



SECTION III

OPERATION

3-1. INTRODUCTION

3-2. This section contains operating information including operating characteristics, input cable considerations, controls and indicators, and operating procedures. Programming instructions are contained in Section II.

3-3. OPERATING CHARACTERISTICS

3-4. The following paragraphs describe the operating ranges and modes, resolution, sample rate, AM and FM characteristics, and auto-amplitude discrimination.

3-5. Operating Ranges

3-6. There are two basic operating ranges available: 10 Hz to 250 MHz and 250 MHz to 18 GHz. Frequencies in the lower range are measured directly while measurements in the 250 MHz to 18 GHz range are made with an indirect transfer oscillator technique. Provision is made to select three operating ranges, these are:

a. 10 Hz to 250 MHz at the BNC connector (1 MΩ, 25 pF).

b. 250 MHz to 18 GHz at the N connector (50Ω).

c. 10 Hz to 18 GHz at the N connector (50Ω).

3-7. The 10 Hz to 250 MHz range restricts the counter to direct measurements. The 250 MHz to 18 GHz range restricts the counter to the transfer oscillator mode, and the 10 Hz to 18 GHz range allows both modes of operation to be in effect. Annunciator lights are included to indicate when the counter is measuring directly (DIR light) or indirectly (LOCK light). It should be noted that during the 10 Hz to 18 GHz operation, the counter may lock on a signal in the 10 Hz to 250 MHz range in preference to a signal in the transfer oscillator range. Thus, to measure a high frequency signal (>250 MHz) containing high levels of residual low frequencies, it is necessary to select the 250 MHz to 18 GHz range. Otherwise, the switch position is dictated by the impedance requirements and frequency of the input signal.

3-8. Resolution and Blanking

3-9. In a frequency counter, resolution can be defined as the value represented by the least significant digit (LSD). In the 5340A, a maximum resolution of 1 Hz can be selected. Decade multiples of 1 Hz to 1 MHz are available. For example, with an input of 12,345,678 Hz, setting the RESOLUTION switch to 1, the counter displays the 8 in the LSD. Selecting 100 on the RESOLUTION switch places the 6 in the LSD. If a frequency such as 123,456,789 Hz is measured with 1 Hz resolution selected, the counter will overflow so that the 1 is not displayed and the 9 will appear in the LSD. For high resolution of measurements which would result in an overflow, two measurements can be made. The first measurement is made with a resolution setting that is adequate to display the most significant digits. The second measurement is made with maximum resolution to display the least significant digits.

3-10. The counter blanks all digits to the left of the most significant digit, suppressing leading zeros.

3-11. Sample Rate, Measurement Time, and Reset

3-12. The sample rate control sets the interval between measurements, but not the interval of the measurement. On the 5340A, the minimum sample rate is variable between approximately 50 milliseconds and 5 seconds. For 1 Hz RESOLUTION settings, an additional 1 sec delay is incurred. A hold feature can be selected to "freeze" a measurement display indefinitely.

3-13. The measurement interval (gate time) is the time that the counter's gate remains open to accumulate counts. In the 5340A, the gate time is a function of the resolution selected and the input frequency. Typical measurement time for an 18 GHz signal with 1K resolution selected is about 120 msec. With 1 Hz resolution selected and an 18 GHz input, the gate time is quite long, approximately 120 seconds. However during this time, the LOCK annunciator lights to indicate that a measurement is in progress.

3-14. Reset is accomplished by pressing the RESET switch or changing the RESOLUTION or RANGE switch. When the counter is reset, the display reads all zeros and a new measurement cycle is initiated.

3-15. AM Characteristics

3-16. The 5340A will measure inputs containing amplitude modulation provided that the minimum level of the input signal is greater than the sensitivity specification. The maximum modulation permissible can be calculated by the following formula:

$$\frac{Vu - Vs}{Vu} = \% \text{ modulation}$$

where: Vu is the unmodulated rms input level.
Vs is the sensitivity specification at the frequency of interest.

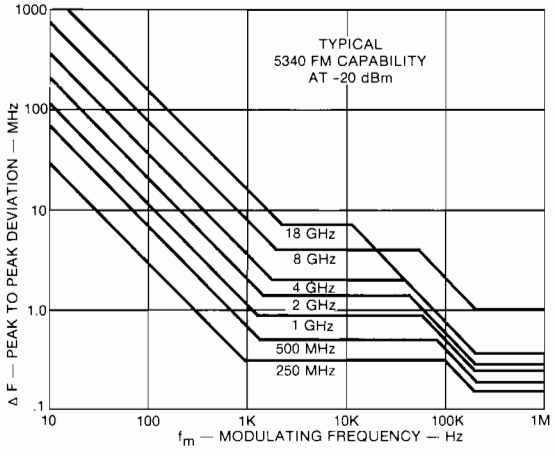
As an example of the use of the formula, calculate the maximum permissible modulation for a -10 dBm (70 mV) input at 10 GHz. At 10 GHz, the sensitivity specification is -35 dBm (4 mV) Using the formula:

$$\frac{Vu - Vs}{Vu} = \frac{70\text{ mV} - 4\text{ mV}}{70\text{ mV}} = \frac{66\text{ mV}}{70\text{ mV}} = 94.5\% \text{ modulation}$$

3-17. FM Characteristics

3-18. The 5340A will measure carrier frequencies in the presence of frequency modulation, phase modulation, or residual noise. The FM characteristics are a function of the modulation rate and carrier frequency as shown in Figure 3-1.

Figure 3-1. FM Characteristics



3-19. Auto-Amplitude Discrimination

3-20. This feature allows the counter to select and measure the signal with the largest amplitude in the 250 MHz to 18 GHz range. This is with the provision that the largest signal is 20 dB greater in amplitude than any other signal present. Although 20 dB is the guaranteed specification, typical operation is about 10 dB. The auto-amplitude discrimination feature is useful for discriminating against harmonics, and spurious signals.

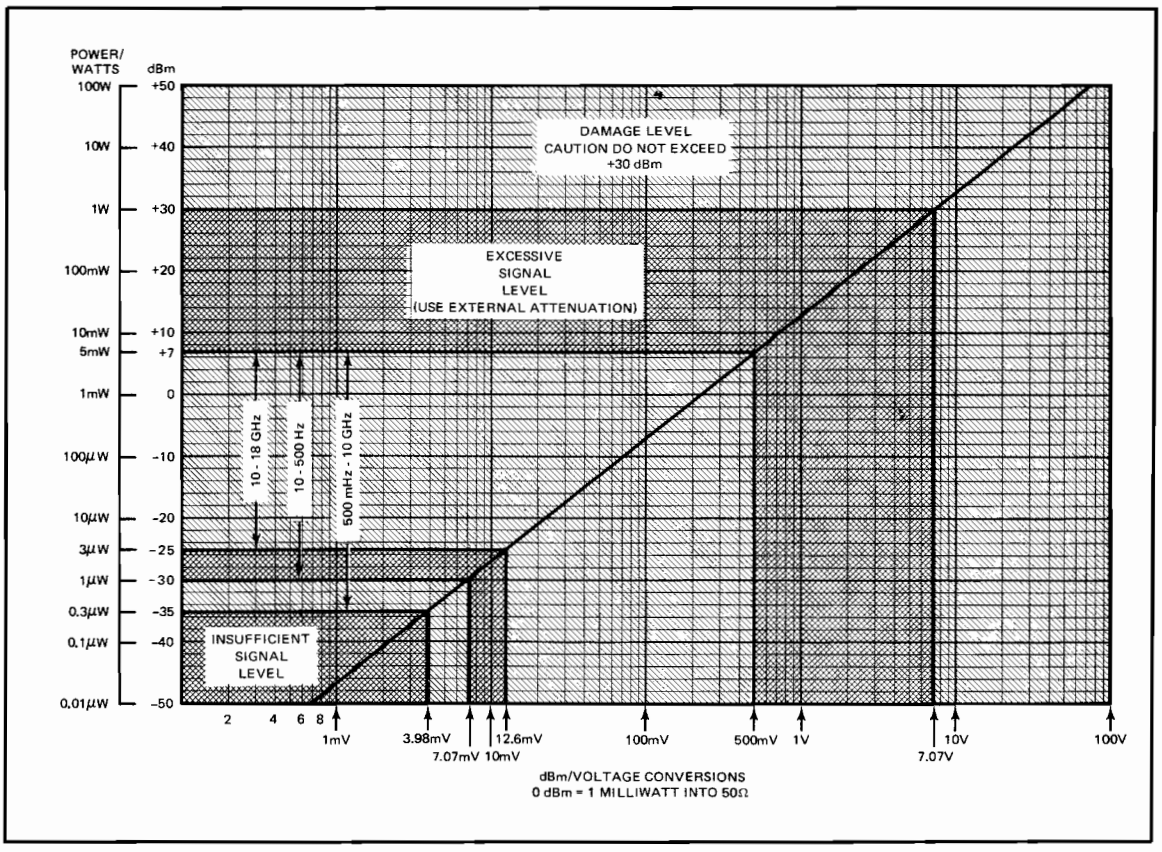
3-21. MAXIMUM INPUT SIGNAL POWER

CAUTION

DO NOT EXCEED 1 WATT OF INPUT POWER AT THE 50-OHM N CONNECTOR. DAMAGE TO THE INTERNAL SAMPLERS MAY OCCUR. PLEASE READ PARAGRAPH 3-22 FOR FULL EXPLANATION OF INPUT LEVELS.

3-22. The 5340A will function within specifications for signal inputs up to +7 dBm (5.012 milliwatts or 0.5006 volts into 50-ohms). Under no circumstance should the input level exceed 1-watt (+30 dBm RF power or ±7 volts dc into 50-ohms, dc power). If the input power exceeds 1-watt, damage to the internal samplers may occur and these are quite expensive to replace. Measurements from +7 dBm to +30 dBm are not recommended because false harmonic locks and readings may occur. When signal levels exceed +7 dBm, external attenuators should be used. The 1-watt maximum input level is the total RF and dc power at the input connector. Figure 3-2 shows power levels with conversions to volts and dBm.

Figure 3-2. DBM to Volts Conversions



3-23. INPUT CABLE CONSIDERATIONS

3-24. Consideration should be given to input cable losses at higher frequencies. For example, a 6-foot RG-214/U coaxial cable has about 15 dB loss at 18 GHz. Such losses should be taken into consideration along with the sensitivity specifications given in Table 1-3.

3-25. For low capacity input measurements, a 10:1 low capacity oscilloscope probe (HP 10004A) can be used on the BNC connector for frequency inputs up to approximately 100 MHz.

3-26. CONTROLS, INDICATORS, AND CONNECTORS

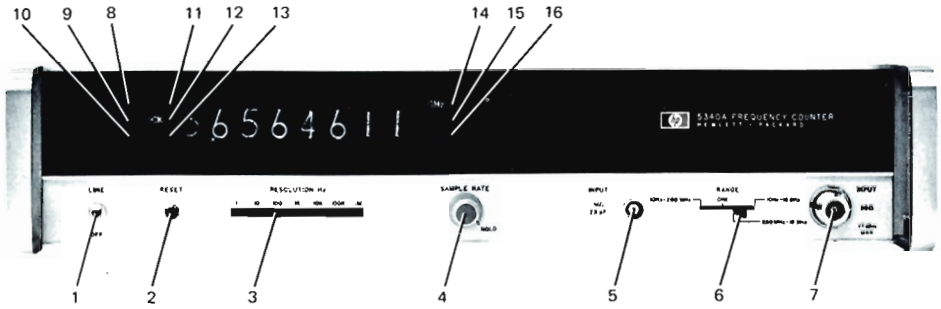
3-27. Figure 3-3 describes the front panel controls, indicators, and connectors. Figure 3-4 describes the rear panel connectors and controls.

3-28. OPERATING PROCEDURES

3-29. Figure 3-5 illustrates the operating procedures. Self check procedures are given Figure 3-6.

III

Figure 3-3. Front Panel Controls and Indicators



1. LINE switch. Applies primary power to all circuits except crystal oven Option 001, when so equipped. When the counter is equipped with Option 001, the crystal oven connects through a thermal circuit breaker and fuse to the ac line. This allows the oven to maintain its operating temperature and accuracy when the LINE switch is OFF, thereby eliminating warm-up delays.

2. RESET switch. Resets display and internal count to zero and initiates a new measurement.

3. RESOLUTION Hz selector. Determines resolution of the measurement. See Paragraph 3-8 for a detailed description. In general, the 1 kHz setting is a good starting point.

4. SAMPLE RATE control. Adjusts the interval between measurements from approximately 50 milliseconds to 5 seconds. For 1 Hz RESOLUTION settings an additional 1 second delay is incurred. When rotated to the HOLD position, the display will be held indefinitely.

5. BNC 1 MEG Ω Input Connector. High impedance (1 Megohm) input for direct count measurements in the 10 Hz to 250 MHz range. Shunt input capacity is 25 pF maximum. Measurements made at this input require that the RANGE switch is set to the 10 Hz - 250 MHz position. Sensitivity is 50 millivolts rms and the coupling is ac.

6. RANGE switch. Selects input connectors and ranges as indicated by the black leader lines. When set to the CHECK position, the circuits count the frequency of the internal clock to verify proper counter operation.

CAUTION

DO NOT EXCEED +30 dBm (1 WATT) INPUT AT THE 50Ω N CONNECTOR. DAMAGE TO THE INTERNAL SAMPLERS MAY OCCUR. PLEASE READ PARAGRAPH 3-21 FOR DETAILS OF ACCEPTABLE INPUT LEVELS.

Figure 3-3. Front Panel Controls and Indicators (Continued)

7. N Type 50Ω Input Connector. Input for measurements in the 10 Hz to 18 GHz or 250 MHz to 18 GHz range as determined by the RANGE switch. Sensitivity is -30 dBm from 10 Hz to 500 MHz, -35 dBm from 500 MHz to 10 GHz and -25 dBm from 10 GHz to 18 GHz.

8. RMT annunciator. For counters equipped with Option 011 only. Lights when the counter is in remote operation.

9. DIR annunciator. Lights when counter is in direct measurement mode. (10 Hz to 250 MHz.)

10. * annunciator. Operative with Option 001 only. Lights when the oven is heating to indicate oscillator is not stabilized. Full counter accuracy is obtained when the oven has stabilized. Twenty minutes after turn on, additional oscillator error is less than 5 parts in 10^9 at 25°C. If the line voltage is low, the * may remain lit for longer periods of time.

NOTE

At low environmental temperatures, e.g., 0°C, the * annunciator may remain on for longer periods of time. When the oven temperature stabilizes, it may continue to draw power in order to maintain operating temperature.

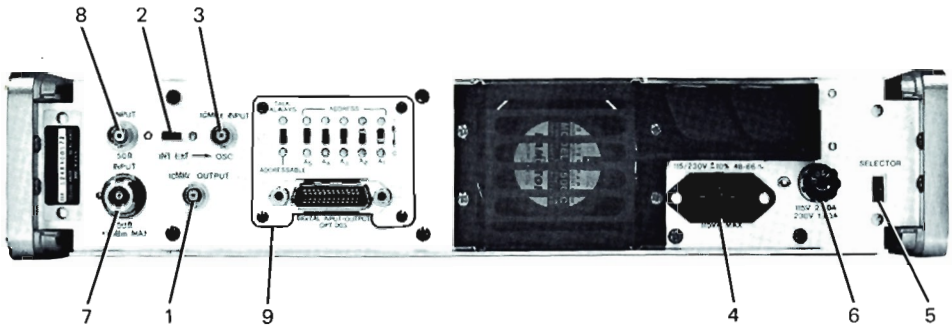
11. OVFL annunciator. Indicates that one or more of the most significant digits (digits left most from the decimal point) are not displayed. The digits that are displayed will be accurate to within ±1 count ± the time base accuracy. For example, if 123,456,789 Hz is measured with 1 Hz RESOLUTION selected, the OVFL annunciator will light, the 1 will not be displayed, and the numbers 23456789 will be displayed and are valid.

12. LOCK annunciator. Indicates that phase LOCK has occurred and a measurement is being made with the transfer oscillator technique.

13. GATE annunciator. Indicates when the counter's main gate is open and a measurement is in progress.

14, 15, 16. GHz, MHz kHz annunciators. Indicates the units multiplier of the measurement.

Figure 3-4. Rear Panel Controls and Connectors



1. 10 MHz OUTPUT. Supplies a 10 MHz square wave output at 2.4 volts peak-to-peak or greater. Output is TTL compatible.

2. INT-EXT OSC switch. Selects time base source. When set to INT, the counter operates from its internal 10 MHz oscillator. When set to EXT, it allows an external 10 MHz sine wave or square wave at the 10 MHz INPUT jack to operate the counter. External oscillator requirements are 10 MHz at approximately 1.5 volts peak-to-peak into 1 kΩ.

3. 10 MHz INPUT jack. Accepts external time base signal. Requirements are a 10 MHz sine wave or square wave at approximately 1.5 volts peak-to-peak (1 kΩ impedance). The INT-EXT switch must be set to EXT to accept the external OSC input.

4. AC Input Connector. Ac power receptacle. IEC type with offset pin connected to the chassis. Accepts 115 volts or 230 votls ±10%, 48 to 68 Hz. Maximum power draw is 100 volt amperes.

5. SELECTOR switch. Allows the 5340A to operate off of 115 volts or 230 volts ac. Use a narrow bladed screwdriver and slide the switch to show the desired operating voltage.

6. FUSE. Requires a 2.0 amp normal blow fuse for 115-volt operation or a 1.0 amp normal blow fuse for 230-volt operation.

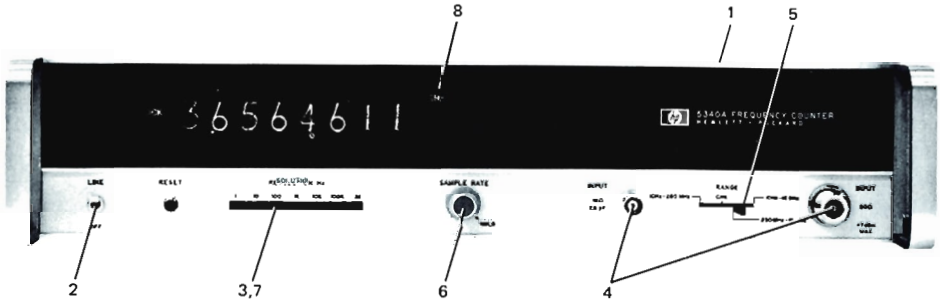
7. Input Option 002 N connector. Same as front panel N connector, see Figure 3-3.

8. BNC input connector Option 002. Similar to front panel BNC input except that this option includes a 50-ohm termination on the front panel BNC connector.

9. Digital Input/Output Option 011. Connector and address switches for remote programming and digital output. See Section II for details of operation.

III

Figure 3-5. 5340A Operating Procedures



1. On Rear Panel set INT-EXT switch to INT position.

2. Set LINE switch to on (up) position.

3. Set RESOLUTION Hz to desired resolution. Recommended starting setting is 1 kHz.

CAUTION

DO NOT EXCEED +30 dBm (1 WATT) INPUT AT THE 50Ω N CONNECTOR. DAMAGE TO THE INTERNAL SAMPLERS MAY OCCUR. PLEASE READ PARAGRAPH 3-21 FOR DETAILS OF ACCEPTABLE INPUT LEVELS.

4. Connect input signal to appropriate input connector according to input frequency and impedance requirements.

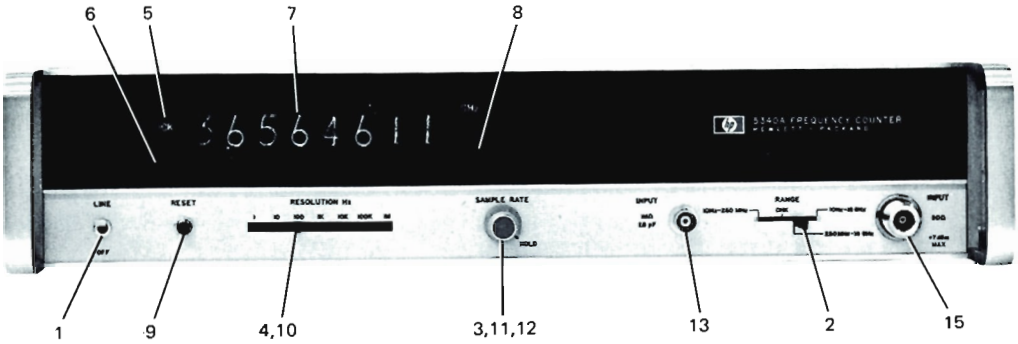
5. Set RANGE switch to correspond with input connector being used.

6. Adjust SAMPLE RATE control for desired interval between measurements.

7. Adjust RESOLUTION Hz switch for desired number of significant digits.

8. Display is in units shown with correct decimal point and significant digits.

Figure 3-6. Self Check and Operational Check Procedures



1. Set LINE switch to on (up) position.
2. Set RANGE switch to CHK position.
3. Rotate SAMPLE RATE control fully ccw.
4. Set RESOLUTION switch to 1 Hz.
5. Check that DIR annunciator lights.
6. Check that GATE light flashes.
7. Check that display indicates 10.000000 ±1 count.
8. Check that MHz annunciator lights.
9. Press and hold RESET switch, DIR and GATE lights should go out and display should be 00.000000. Release RESET switch, check that display is 10.000000 MHz ±1 count.
10. Change RESOLUTION switch to the following positions and check for proper display. When the switch is in between positions, the DIR light and GATE light should go out and the display should reset (all zeros).

RESOLUTION Switch	DISPLAY (B = Blank Display Tube)
10 Hz	B10.00000 MHz ±1 count
100 Hz	BB10.0000 MHz ±1 count
1 kHz	BBB10.000 MHz ±1 count
10 kHz	BBBB10.00 MHz ±1 count
100 kHz	BBBBB10.0 MHz ±1 count
1 MHz	BBBBB.010 GHz ±1 count

Figure 3-6. Self Check and Operational Check Procedures (Continued)

11. For the 1 MHz RESOLUTION setting, check that GATE light flashes rapidly. Rotate SAMPLE RATE control fully clockwise but not in HOLD. Gate light should flash once approximately every 5 seconds.

12. Set SAMPLE RATE to HOLD and check that GATE light goes out and display is held indefinitely.

13. Connect a 220 MHz signal at 0 dBm (0.2236 volts rms) to the 10 Hz - 250 MHz INPUT. Set RANGE switch to 10 Hz to 250 MHz. Set RESOLUTION switch to 1K. Rotate SAMPLE RATE control fully ccw.

14. Check that gate lamp flashes, DIR lamp lights, and counter displays proper frequency for all positions of RESOLUTION switch.

15. Connect the 220 MHz signal (0 dBm) to the 50Ω INPUT and set RANGE switch to 10 Hz - 18 GHz. Set RESOLUTION switch to 1 kHz.

16. Check that GATE lamp flashes, DIR lamp lights, and counter displays correct frequency for all positions of the RESOLUTION switch.

17. Set RANGE switch to 250 MHz - 18 GHz. Check that LOCK lamp lights, GATE lamp flashes, and counter displays correct frequency for all positions of the RESOLUTION switch.

18. For each position of the RESOLUTION switch, move RANGE switch between "250 MHz - 18 GHz" and "10 Hz - 18 GHz" positions. The displayed frequencies should agree within 1 count.

19. If counter fails in any of the above steps, refer to Section V.

HEWLETT PACKARD

MANUAL CHANGES

MANUAL DESCRIPTION

INSTRUMENT: 5340A Frequency Counter
Operating and Service Manual

SERIAL PREFIX: 1532A

DATE PRINTED: SEP 1975
HP PART NO: 05340-90021
MICROFICHE NO: 05340-90022

CHANGE DATE: February 13, 1979

(This change supersedes all earlier dated changes)

- Make all changes listed as ERRATA.
- Check the following table for your instrument's serial prefix or serial number and make listed change(s) to manual.

IF YOUR INSTRUMENT HAS SERIAL PREFIX OR SERIAL NUMBER	MAKE THE FOLLOWING CHANGES TO YOUR MANUAL	IF YOUR INSTRUMENT HAS SERIAL PREFIX OR SERIAL NUMBER	MAKE THE FOLLOWING CHANGES TO YOUR MANUAL
1532A03151 & above	1	1804A	1, 2, 3, 4 5
1644A	1, 2	1816A	1, 2, 3, 4, 5, 6
1724A	1, 2, 3	1840A	1, 2, 3, 4, 5, 6, 7
1728A	1, 2, 3, 4	1844A	1, 2, 3, 4, 5, 6, 7, 8
►NEW OR REVISED ITEM		►1904A	1,2,3,4,5,6,7,8,9

The following Service Notes are available from your local HP Sales and Service Office.

Model	Description
5340A-1	Ferrite Beads to Stop Oscillations in HI-Z Input Amplifier Assembly (A3)
5340A-2	Stiffening Bracket to Improve Chassis Vibration Stability
5340A-3	Option 003 Remote Programming Troubleshooting and Check Out Aide
5340A-4	Mixer Assembly A11 Calibration after A11U1 Replacement
5340A-5	Integrated Circuit Change
5340A-6	Adjustment to Correct Intermittent Display of all Zeros
5340A-7	A25 Display Assembly Decoder/Drivers to be Replaced by Selected IC's Only
5340A-8	Using a Logic State Analyzer for 5340A Assembly Troubleshooting
5340A-9	Line Fuse Change for Improved Transformer Protection
5340A-10	Thermal Switch Change
5340A-11	HP-IB Verification Program for Option 011

ERRATA

Page 8-15, Figure 8-9, A3 Component Locator:
Change (on component locator only) C3 to C5; C5 to C6; C6 to C7; C7 to C8; C8 to C9; and C9 to C3.

Page 8-14, Part of Figure 8-9, Waveforms:
Change identification letters for measurement data under waveforms.
Transpose letters B and C by changing B to C and C to B.

Page 6-12, Table 6-1, A7 Replaceable Parts:
Change A7R26 to HP Part No. 0757-0924, value to 1000 ohms, and Mfr Part Number to "C4-1/8-TO-511RF."

Page 8-23, Figure 8-13, A7 Schematic Diagram:
Change value of A7R26 from 2000 to 1000 ohms.

Page 6-14, Table 6-1, A9 Replaceable Parts:
Change A9R12 from 0683-5145 (510KΩ) to 0683-6245 with a value of 620K ohms and Mfr Part No. CB6245. Add asterisk to show a factory selected value.

Page 8-27, Figure 8-15, A9 Schematic Diagram:
Change A9R12 from 510K to 620K and add asterisk (*) adjacent to A9R12.

6178-6405-6406-6999-7031-7042-7107-7111-7116-7119-7469-7487-7919/8209/8249-8279/
7494-8430-8462/8275/8433/

ERRATA (Cont'd)

Page 6-19, Table 6-1, A17A1 Replaceable Parts:
Change A17A1U4 from "NOT ASSIGNED" to 1820-1179; IC TTL DIGITAL; 28480; 1820-1179.
Delete A17A1U5 from parts list.
Delete A17A1E3 from parts list.

Page 8-43, Figure 8-23, A17 Schematic Diagram:
Change U5A and U5B to U4A and U4B respectively.
Change A17A1 REFERENCE DESIGNATIONS table by changing "U1-3, 5" to "U1-4".
Change ACTIVE ELEMENTS table by changing "U5A" to "U4" and "1820-0753" to "1820-1179".
Move E2 FERRITE BEAD from junction between A17A1C1 and A17A1C2 to the opposite side of A17A1C1 between the junction with A17A1R23 and the positive side of the capacitor.
Add "NOTE 4. BEAD E2 NOT IN ALL INSTRUMENTS."
Delete U5A and U5B in A17 Block Diagram. Connect output of U4B to the junction of U1, U2, and Direct Count To A22.

Page 8-33, Figure 8-18, A12 Schematic Diagram:
Change A12C10 and A12C18 from 22 pF to 18 pF.
Add an asterisk adjacent to A12C10, A12C18 and A12R8.

Page 6-20, Table 6-1, A20 Replaceable Parts:
Change A20U24 from 1820-1096 to 1820-1147; IC TTL 40 MHz PRESETTABLE DECADE 27014; DM74196.

Page 8-18, Figure 8-8 Schematic Diagram:
Add an asterisk adjacent to A2A4C3 and A2A4R4.

Page 8-53, Figure 8-27, A20 Schematic Diagram:
Change table of ACTIVE ELEMENTS to DM74196 in place of SN5419 for integrated circuit A20U24.

Pages 6-17 and 6-18, Table 6-1, A14 Replaceable Parts:
Change A14C1, C10, C11, C23, and C26 from 0160-2055 (.01 μF +-20% 100V) to 0160-3277; CAPACITOR FXD .01 UF 20% 50WVDC CER; 28480; 0160-3277.

Change A14C2, C3, C4, C15, and C16 from 0160-3277 (.01 μF 20% 50V) to 0160-2055; CAPACITOR FXD .01 UF +80 -20% 100WVDC CER; 28480; 0160-2055.

Page 1-4, Table 1-3, Option 001 Specifications:
Change Option 001 Specifications to:
Aging Rate: $< 5 \times 10^{-10}$/day after 24 hour warm-up[1] and $< 1.5 \times 10^{-7}$/year.
Frequency Adjustment Range: $> \pm 1 \times 10^{-6}$ ($> \pm$ 10 Hz from 10 MHz) with 18-turn control.

Page 6-24 and 6-25, Table 6-1, A25 and A26 Replaceable Parts:
Change part number of A25Q1 through A25Q6 and A26Q1 through A26Q5 from 1854-0533 to 1854-0575; Transistor NPN SI PD=625MW, FT=50 MHz; 04713; MPS-A42. The 1854-0575 is the preferred replacement part.

Page 8-65, Figure 8-32, A25 and A26 Schematic Diagram:
In table of active elements, change A25Q1 through A25Q6 and A26Q1 through A26Q5 from 1854-0533 to 1854-0575.

Page 6-25, Table 6-1, A28 Replaceable Parts:
Change A28Q9 from 1854-0533 to 1854-0575; Transistor NPN SI PD=625 MW, FT=50 MHz; 04713; MPS-A42.

Page 8-69, Figure 8-33, A28 Schematic Diagram:
In table of active elements, change A28Q9 from 1854-0533 to 1854-0575.

Page 6-25, Table 6-1, A26 Replaceable Parts:
Change A26Q6 through A26Q10 from 1853-0317 to 1853-0336, Transistor PNP SI PD=625 MW, FT=50 MHz; 04713; MPS-A92. The 1853-0336 is the preferred replacement part.

Page 8-65, Figure 8-32, A26 Schematic Diagram:
In table of active elements, change A26Q6 through A26Q10 from 1853-0317 to 1853-0336.

Page 6-6, Table 6-1, A2A3 (05340-60043) Replaceable Parts:
Change A2A3R1 from 0683-4745 (470KΩ) to 0683-2245; *RESISTOR 220K 5% .25W FC TC=-800/+900; 01121; CB2245; *FACTORY SELECTED VALUE.

ERRATA (Cont'd)

Page 6-7, Table 6-1, A3 (05340-60001) Replaceable Parts:
Change A3C10 part number to 0160-2326 in HP Part Number column, Mfr Code to 28480, and Mfr Part Number to 0160-2326.

Page 6-26, Table 6-1, A30 (05340-60029) Replaceable Parts:
Change A30CR1, CR2, and CR3 from 1906-0027 to 1901-0366; DIODE-FW BRIDGE 400V 1A; 02037; SDA-10185-6.

Page 6-29, Table 6-1, Replaceable Chassis Parts:
Change F1 for 115V operation to 2110-0007; FUSE 1 AT 250V 1.25 x .25 UL/IEC; 04703; 313001.
Change F1 for 230V operation to 2110-0202; FUSE 500 mAT 250V 1.25 x .25 UL/IEC; 04703; 313.500.
NOTE – The above fuses are recommended replacements for use in all instruments.

Page 6-30, Table 6-1, Replaceable Chassis Parts:
Change TH1 from 3103-0022 to 3103-0057; SWITCH THERMAL FXD OPEN 85°C (+185°F) CLOSE 65.5°C (+150°F); 28480; 3103-0057.

Page 8-13, Figure 8-8, A2A3 Schematic Diagram:
Change A2A3R1 value from 470K to 220K ohms.

Page 8-69, Figure 8-33, A28, A29, and A30 Schematic Diagrams:
Change F1 to "1.0AT FOR 115V-500 mAT FOR 230V".
Change A30CR1, CR2, CR3 in ACTIVE ELEMENTS table to 1901-0366.

Page 6-23, Table 6-1, A23 (05340-60030) Replaceable Parts:
Change A23U8 and U9 from 1820-0659 (93L00) to I820-1300, IC SHF-RGTR TTL LS R-5 PRL-IN PRL-OUT; 01295; SN74LS195AN.

Page 2-14, Paragraph 2-46b:
Change paragraph to the following:

b. Octave Ranges

Sending the proper ASCII character will program the 5340A for compensation of a particular octave range. This feature can save up to 110 milliseconds of search time when the approximate frequency of the input signal is known. However, the counter may lock on and measure any signal in another octave range if the signal amplitude is greater than the desired signal. Consequently, FM tolerance is degraded since the programmed phase-locked-loop compensation is not correct for the octave range with the higher signal. In octave range programming, an N check is not performed. When AUTO is programmed, the 5340A sweeps all octave ranges as in manual control. If the 10 Hz-250 MHz range is programmed (code G), the 5340A remains in the direct count mode and sensitivity falls off at frequencies above 200 MHz to as low as -20 dBm at 250 MHz. (In programmed AUTO mode or in front panel controlled manual mode, the counter automatically switches from direct to a locked mode at frequencies around 200 MHz to maintain a sensitivity of -30 dBm up to 500 MHz).

Page 6-18, Table 6-1, A16 (05340-60015) Replaceable Parts:
Change A16XA4 through XA15 to 1251-2035; CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS; 28480; 1251-2035.

Page 6-26, Table 6-1, A30 (05340-60029) Replaceable Parts:
Change A30XA28, XA29, XA31, and XA32 from 1251-1886 to 1251-2035; Mfr Code to 28480; Mfr Part Number to 1251-2035.

Page 6-6, Table 6-1, A2A4 (05340-60040) Replaceable Parts:
Change A2A4C3 from HP Part No. 0140-0201 to 0160-0987; Mfr Code to 28480; Mfr Part Number to 0160-0987.

Change A2A4C20 from HP Part No. 0140-0195 to 0160-0183; Mfr Code to 28480; Mfr Part Number to 0160-0183.

Change A2A4C21 from HP Part No. 0160-2198 to 0160-2033; Mfr Code to 28480; Mfr Part Number to 0160-0183.

Change A2A4C22 from HP Part No. 0140-0193 to 0140-0146; Mfr Part Number to DM15E820J0300WV1CR.

CHANGE 1 (Serial 1532A03151 and above)

The 5340A Frequency Counter is furnished less the RACK MOUNTING KIT described in this manual. If ordered at the same time as the instrument, the RACK MOUNTING KIT described in the manual is available as Option 908 at additional cost. If not ordered with an instrument, the RACK MOUNTING KIT is available under HP Part No. 05326-60046. Disregard any manual references stating the instrument is supplied with a rack mounting kit. Individual parts in the rack mounting kit are listed in Table 6-1 on Page 6-31 of the Operating and Service Manual.

Page 6-31, Table 6-1, 5340A Replaceable Parts:
Change XF1 fuseholder from 1400-0084 to the following recommended replacement for all instruments:
2110-0465; FUSEHOLDER BAYONET CAP; 75915; 345003-020
2110-0470; FUSEHOLDER BODY UL/IEC; 75915; 345003-010
2950-0054; NUT FUSEHOLDER MTG 1/2-28; 28480; 2950-0054

Page 6-37, Table 6-5, Option 011 Replaceable Parts:
Change A35MP1 from 0380-0513 to 0380-0644. These two hexagonal studs (0380-0644) for the HP-IB connector accommodate lock screws with ISO metric thread M3.5 x 0.6 or an equivalent Optimum Metric Fastener System (OMFS) thread 3.5P06.

Metric hardware supplied by HP for HP-IB connectors can be identified by the black finish. If metric tools are not available, a 9/32 inch hex socket will fit the 7 mm hex stud.

Conversion Kits for converting earlier instruments to use the metric lock screws are available through any HP Sales or Service Office.

CAUTION

THE THREADS OF THE METRIC HARDWARE WILL NOT FIT THE 6-32 UNC THREADS ON HARDWARE WITH A SILVER FINISH. THE THREADS WILL STRIP IF THE HARDWARE IS INTERMIXED.

CHANGE 2 (1644A)

Page 6-5, Table 6-1, A1A4 Replaceable Parts:
Change series number of A1A4 to series 1644.

Change A1A4 C9 and C15 from 0160-2189 to 0160-2033 Capacitor Fxd 20 pF ±5% 500WVDC Mica, 28480, 0160-2033.

Change A1A4C10 from 0140-0224 to 0160-2533 Capacitor Fxd 280 pF ±1% 300WVDC Mica, 28480, 0160-2533.

Change A1A4C11 and C13 from 0160-2150 to 0160-0179 Capacitor Fxd 33 pF ±5% 300WVDC Mica, 28480- 0160-0179.

Change A1A4C12 from 0140-0217 to 0160-2362 Capacitor Fxd 140 pF ±2% 300WVDC Mica, 28480, 0160-2362.

Page 8-11, Figure 8-7, A1A4 Preamplifier Schematic Diagram:
Change series of A1A4 to series 1644.

Page 6-23 and 6-24, Table 6-1, A25 Replaceable Parts:
Delete A25CR1 and A25R11.

Change series number of A25 to series 1644.

Page 8-65, Figure 8-32, A25 Schematic Diagram:
Change series number of A25 to series 1644.

Delete A25CR1 and A25R11 from schematic diagram and table of active elements. A25CR1 is replaced with a jumper wire.

Page 6-21, Table 6-1, A21 Replaceable Parts:
Change A21R7 from 0757-0957 to 0757-0968 Resistor 68K 2% .125W F TC=0±100, 24546, C4-1/8-TO-6802-G.

Page 8-55, Figure 8-28, A21 Schematic Diagram:
Change A21R7 to 68K.

CHANGE 3 (1724A)

Page 6-18, Table 6-1, A17A1 (05340-60038) Replaceable Parts:
Change A17A1 circuit board from SERIES 1416A REV. B to SERIES 1724.

Add A17A1R24; 0698-7964; RESISTOR 100K 5% .125W CC TC = -466/+875; 01121; BB1045.

Page 8-43, Figure 8-23, A17A1 (05340-60038) Schematic Diagram:
Change A1A1 series number from "1416A REV. B" to 1724.

Add 100KΩ resistor A17A1R24 between A17A1U2 pin 6 and circuit board common.

Change resistor listing for A17A1 in REFERENCE DESIGNATIONS table to "R1-24".

CHANGE 4 (1728A)

Page 6-26, Table 6-1, A30 (05340-60029) Replaceable Parts:
Change A30 series number from 1220A to SERIES 1728.
Change A30C1 and C2 from 0180-2387 (2200μF) to 0180-2541;
CAPACITOR - FXD 1800μF +75-10% 40 VDCW ALUM; 56289; 602D182G040AA2A.

Change A30C3 and C4 from 0180-2386(2800μF) to 0180-2387;
CAPACITOR-FXD 2200μF+75-10% 30VDCW AL; 56289; 602D222G030AA2A.

Page 8-69, Figure 8-33, A30 (05340-60029) Schematic Diagram:
Add A30 series number 1728 at top of diagram.

Change A30C1 and C2 from 2200 to 1800μF

Change A30C3 and C4 from 2800 to 2200μF

CHANGE 5 (1804A)

Page 6-12, Table 6-1, A8 (05340-60006) Replaceable Parts:
Change A8 from SERIES 1220A to SERIES 1804.

Change A8C10, C12, and C14 from 0160-0161 (.01 UF 10%) to 0160-0207; CAPACITOR-FXD .01 UF 5% 200 VDCW POLYE; 56289; 292P10352.

NOTE – The 0160-0207 capacitors are recommended replacements in any 05340-60006 circuit board for A8.

Page 8-25, Figure 8-14, A8 Schematic Diagram:
Change series number (top of diagram) from 1220A to 1804.

Page 6-21, Table 6-1, A21 (05340-60021) Replaceable Parts:
Change A21 from SERIES 1252 to SERIES 1804.

Add an asterisk (*) following A21R6.

Add "FACTORY SELECTED VALUE" to A21R6 "Description".

Page 8-55, Figure 8-28, A21 Schematic Diagram:
Change A21 series (top of diagram) from 1252A to SERIES 1804.

Add an asterisk (*) adjacent to A21R6.

Page 6-26, Table 6-1, A30 (05340-60029) Schematic Diagram:
Change A30 from SERIES 1728 to SERIES 1804.

Change A30CR1, CR2, and CR3 from 1901-0366 to 1906-0027, Mfr Code to 04713 and Mfr Part Number to MDA922-6.

NOTE – Either the 1901-0366 or 1906-0027 diodes can be used for replacement purposes.

Page 8-75, Figure 8-34, A30 Schematic Diagram:
Change series number for A30 from 1728 to SERIES 1804.

CHANGE 6 (1816A)

Page 6-26, Table 6-1, A30 (05340-60029) Replaceable Parts:

Change A3 series number from 1804 to 1816.

Change the three diodes A30CR1, A30CR2, and A30CR3 from 1906-0027 to 1901-0366; DIODE-FW BRDG 400V 1A; 28480; 1901-0366.

Page 8-75, Figure 8-34, A30 Schematic Diagram:

Change the A30 assembly series number (top of diagram) from 1804 to 1816.

CHANGE 7 (1840A)

Page 6-30, Table 6-1, Replaceable Parts:

Change S1 from 3101-1694 to 3101-2269; SWITCH-TGL SUBMIN DPDT NS 3A 250 VAC (AC ON/OFF); 28480; 3101-2269.

Change W1 from 05505-60019 to 05341-60031 in "HP Part Number" and "Mfr Part Number" columns.

Instrument Serial Prefix changes from 1816A to 1840A with these changes.

CHANGE 8 (1844A)

Page 6-5, Table 6-1, A1A4 (05340-60014) Replaceable Parts:

Change A1A4 series number from 1644 to 1844.

Change A1A4C4 from 0160-3284 (22 pF) to 0160-3028; CAPACITOR FXD 10PF 10% 100WVDC; 28480; 0160-3028.

Add A1A4C25; 0121-0475; CAPACITOR-VAR 2-22 PF 100V: 28480; 0121-0475.

Page 8-11, Figure 8-7, A1 Schematic Diagram:

Change series number at top of A1A4 diagram from 1644 to 1844.

Change A1A4C4 from 22 to 10 pF.

Add A1A4C25 variable capacitor (2-22 pF) in parallel with A1A4C4 and A1A4L1.

Change A1A4 capacitor listing in REFERENCE DESIGNATIONS table from C1-24 to C1-25.

►**CHANGE 9 (1904A)**

►Pages 6-23 and 6-24, Table 6-1, A25 (05340-60020) Replaceable Parts:

Change A25 series number from 1644 to 1904.

Add A25Q8, Q9, and Q10; 1854-0575; TRANSISTOR NPN SI PD=625MW, FT=50 MHz; 04713; MPS-A42.

Add A25R28, R29, R30; 0757-0934; RESISTOR 2.7K 2% .125W F TC=0 ±100; 24546; C4-1/8-T0-2701-G.

►Page 8-65, Figure 8-32, A25 Schematic Diagram:

Change A25 series number from 1644 to 1904.

Add A25Q8, Q9, and Q10 in series with A25DS15, DS16, and DS17 as shown in attached Figure 1.

Add A25R28, R29, and R30 bias resistors as shown in attached Figure 1.

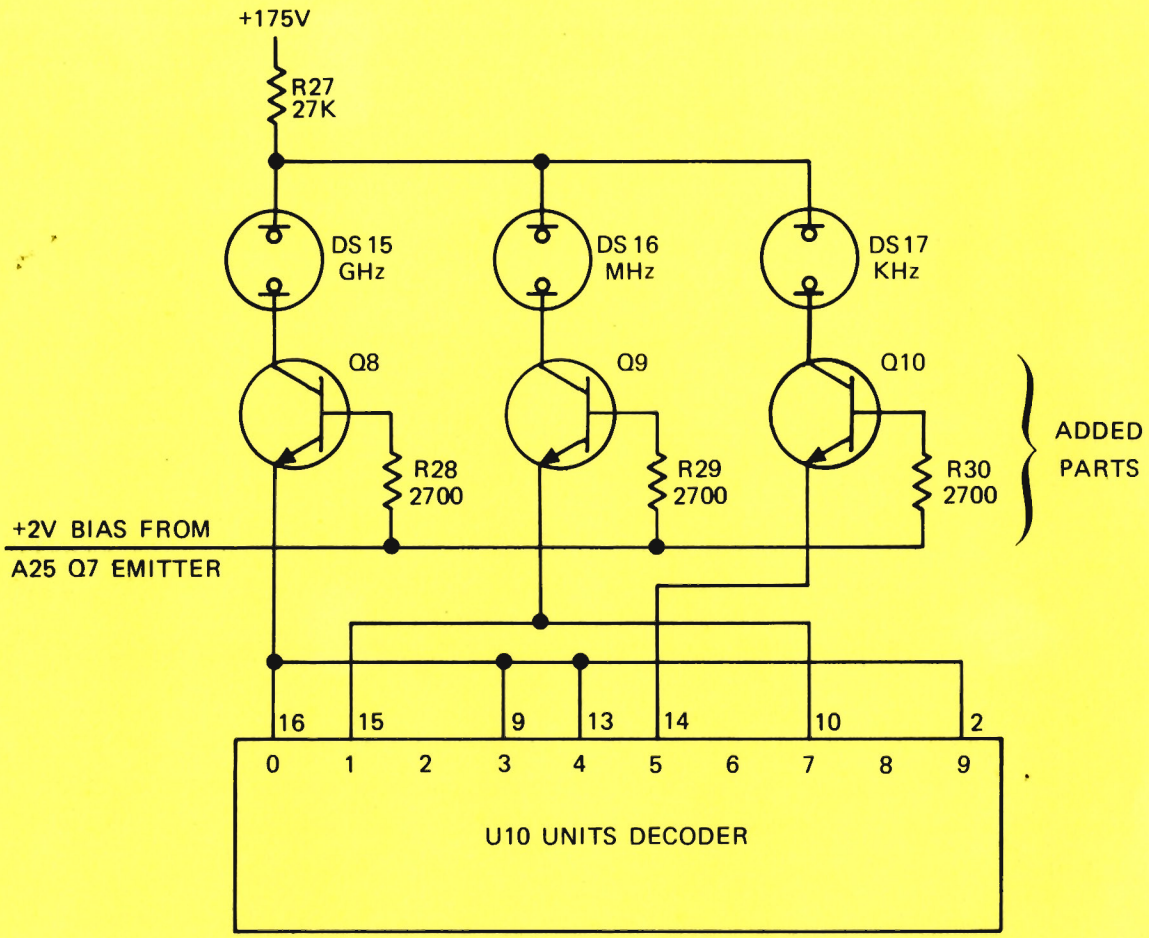


Figure 1. A25 DISPLAY ASSY SERIES 1904 CHANGE

SECTION V

MAINTENANCE AND SERVICE

5-1. INTRODUCTION

5-2. This section contains maintenance and service information including a table of assemblies, recommended test equipment, in-cabinet performance check, troubleshooting, and adjustment procedures.

5-3. ASSEMBLY DESIGNATIONS

5-4. Table 5-1 lists the designation, nomenclature, and Hewlett-Packard part number of assemblies used in the 5340A.

5-5. TEST EQUIPMENT

5-6. Table 5-2 lists test equipment recommended for maintaining and checking the performance of the counter. Test equipment having equivalent characteristics may be substituted for the equipment listed.

5-7. POZIDRIV SCREWDRIVERS

5-8. Pozidriv screws are used in this instrument. To avoid damage to the screw slots, a pozidriv screwdriver (HP Part Number 8710-0900) should be used.

5-9. ADJUSTMENTS AND IN-CABINET PERFORMANCE CHECK

5-10. Figure 5-2 contains adjustment procedures for the 5340A. Adjustments should be made when the necessity is established by the performance test or when components are replaced that affect an adjustment. If all adjustments are to be performed, they should be performed in the order listed. Table 5-3 contains the in-cabinet performance check.

5-11. BLOWER FAN CONFIGURATION

5-12. The cooling fan in the 5340A is an exhaust fan, not an intake type. The fan discharges air out of the rear of the instrument. If the flow of air was reversed, the heat generated by the fan would preheat the intake air and tend to raise the internal temperature of the instrument.

5-13. K05-5340A DESCRIPTION

5-14. The K05-5340A Feed Forward Simulator or equivalent is required to adjust A8 and A9. During the adjustment procedure, A7 is removed and the K05-5340A is installed in XA7. The K05-5340A provides a variable simulated feed-forward signal to A10 and A12. The K05-5340A Feed-Forward Simulator can be purchased through your local Hewlett-Packard Sales and Service Office. An equivalent of the K05-5340A can be fabricated with the following parts and schematic diagram (see Figure 5-1).

5-15. An alternate method is to connect a 0-15V dc power supply from XA7 pin 10 to XA7 pin 5.

Table 5-1. Assembly Identification

Reference Designation	Description	HP Part No.
A1	Preamplifier No. 1	05340-60017
A1A1	Sampler No. 1	5088-7004
A1A2	Sampler Driver	5088-7005
A1A3	Sampler Output	05340-60042
A1A4	Preamplifier Board	05340-60014
A1A5	Filter	05340-60077
A1A5A1	Filter Board	05340-60075
A2	Preamplifier No. 2	05340-60027
A2A1	Sampler No. 2	5088-7004
A2A2	Sampler Driver	5088-7005
A2A3	Sampler Output	05340-60043
A2A4	Preamplifier Board	05340-60040
A2A5	Filter	05340-60078
A2A5A1	Filter Board	05340-60076
A3	High-Impedance Input Amplifier	05340-60001
A4	Phase/Quad Detector	05340-60002
A5	Search	05340-60003
A6	Search Programmer	05340-60004
A7	DC Amplifier/Compensator No.	05340-60005
A8	Bandpass Filter/Phase Detector	05340-60006
A9	DC Amplifier/Compensator No. 2	05340-60007
A10	Voltage-Controlled-Oscillator No. 2	05340-60008
A11	Mixer	05340-60009
A12	Voltage-Controller-Oscillator No. 1	05340-60008
A13	Limiter/Amplifier	05340-60010
A14	Limiter/Amplifier/Mixer	05340-60011
A15	10 MHz Doubler	05340-60012
A16	Casting Motherboard	05340-60015
A17	Direct Count Amplifier	05340-60041
A17A1	Direct Count Amplifier Board	05340-60038
A18	10 MHz Oscillator	05340-60036
A18	10 MHz Oscillator (Part of Option 001)	10544A
A19	Interface A	05340-60031
A19	Interface B (Part of Option 011)	05340-60032
A20	Time Base	05340-60073
A21	Control	05340-60021
A22	High-Frequency Counter	05340-60016
A23	Count Register	05340-60030
A24	Display Register	05340-60019
A25	Display	05340-60020
A26	Blanking	05340-60037
A27	Resolution Switch	05340-60026
A28	-15 Volt and +175 Volt Regulators	05340-60022
A29	+15 Volt Regulator	05340-60025
A30	Power Supply Motherboard	05340-60029
A31	-5 Volt Regulators	05340-60024
A32	+5 Volt Regulators	05340-60023
A33	Time Base Power Supply (Part of Option 001)	05340-60039
A34	Bus Communicator (Part of Option 011)	05340-60067
A35	Connector Assembly (Part of Option 011)	05340-60068

Table 5-2. Recommended Test Equipment

Instrument	Required Characteristics	Recommended Type
Oscilloscope	150 MHz	HP 183A with 1830A and 8140A Plug-ins
Divider Probes (3)	10:1 Divider Ratio	HP 10001A
Test Oscillator	10 Hz	HP 651B
Signal Generator		HP 606B
Signal Generator		HP 608E
Signal Generator		HP 612A
Signal Generator		HP 618C
Signal Generator		HP 620B
Signal Generator		HP 626A
Signal Generator		HP 628A
Signal Source		HP 8614B
Signal Generator	18 GHz	HP 8616A
Frequency Standard	1 MHz, or 5 MHz, or 10 MHz	HP Cesium Beam Type
Spectrum Analyzer	300 MHz	HP 8554L/8552A
Feedthrough Termination	50Ω	HP 11048B
Logic Probe	Logic State Tests	HP 10525T
Logic Clip	Logic State Test	HP 10528A
Logic Pulser	Logic State Tests	HP 10526A
Logic Comparator	IC Testing	HP 10529A
Digital Voltmeter	0 to +175 Volts Accuracy .3%	HP 3480A and HP 3482A
Feed Forward Simulator	0 to +15 Volts dc	HP K05-5340A
RF Extender Board		HP 05340-60047
Screwdriver	Pozidriv	HP 8710-0900
Wrench for Rigid Coax Fittings	5/16″ open end	
Nutdriver	5/16″	

Figure 5-1. K05-5340A Feed-Forward Simulator, Schematic Diagram

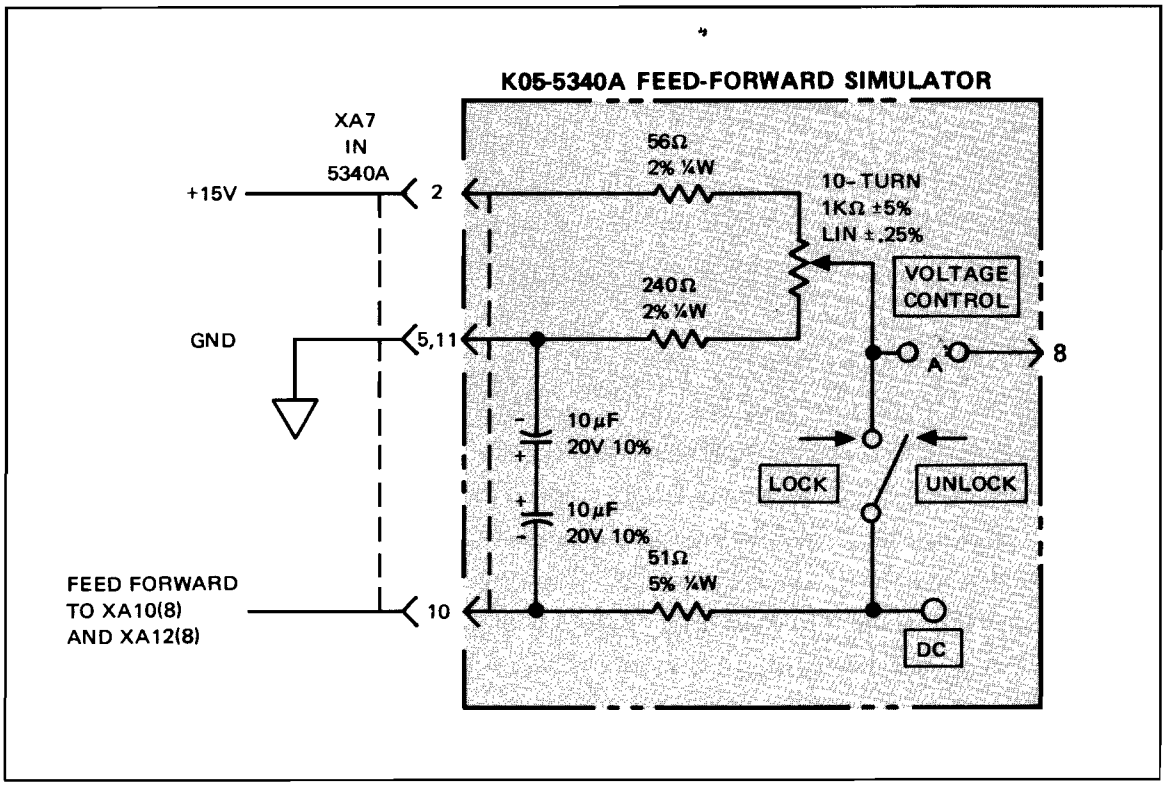


Figure 5-2. Adjustment Procedures

1. POWER SUPPLY ADJUSTMENTS (05340-60012)

a. -15V Adjustment. On A28 -15V Regulator board (05340-60022), connect voltmeter to TP2. Connect other lead to chassis. Adjust potentiometer A28R7 for -15.00 ±0.05 volts indication.

b. +15V Adjustment. On A29 +15V Regulator board (05340-60025), connect voltmeter lead to TP2. Adjust potentiometer A29R5 for +15.00 ±0.05 volts indication.

c. -5V RF Supply Adjustment. On A31 -5V Regulator board (05340-60024), connect voltmeter probe to TP2. Adjust potentiometer A31R9 for -5.00 ±0.05 volts indication. A31R9 is near TP1.

d. -5V Digital Supply Adjustment. On A31 -5V Regulator board (05340-60024), connect voltmeter probe to TP3. Adjust potentiometer A31R2 for -5.00 ±0.05 volts indication. A31R2 is near the front edge of the board.

e. +5V RF Supply Adjustment. On A32 +5V Regulator board (05340-60023), connect voltmeter to TP1. Adjustment potentiometer A32R6 for +5.00 ±0.05 volts indication. A32R6 is adjacent to TP1.

f. +5V Digital Supply Adjustment. On A32 +5V Regulator board (05340-60023), connect voltmeter to TP2. Adjust potentiometer A32R3 for +5.00 ±0.05 volts indication. R3 is adjacent to TP2, and near the front edge of the board.

g. Time Base Power Supply (+11V) Adjustment (Option 001). On A33 +11V Regulator board (05340-60039), connect voltmeter to TP1. Adjust potentiometer A33R8 for +11.00 ±0.05 volts.

2. HIGH IMPEDANCE AMPLIFIER ADJUSTMENT (05340-60001)

a. Connect a 608 Signal Generator to "10 Hz to 250 MHz" input BNC on 5340A using a 50 ohm feedthru termination.

b. Set 608 to 100 MHz at 100 mV rms. (283 mV p-p) (-7 dBm).

c. Set 5340A RANGE switch to 10 Hz -250 MHz and resolution switch to 100 Hz.

d. On A3 Input board (05340-60001), adjust potentiometer A3R10 for a stable count.

e. Decrease input signal level and adjust A3R10 for a stable display.

f. Continue to decrease input signal level and adjust A3R10 for maximum sensitivity.

g. Verify that the 5340A properly measures input signals of 50 mV rms or less (140 mV p-p) (-14 dBm).

3. 50Ω DIRECT COUNT ADJUSTMENT (05340-60041)

a. Connect a 608 Signal Generator to the type N connector on the 5340A. Set the generator to 100 MHz at -25 dBm (12.6 mV rms) (35.6 mV p-p).

b. Set 5340A RESOLUTION switch to 100 Hz and the RANGE switch to the 10 Hz to 18 GHz position.

c. Remove the four screws attaching the cover on the A17 (05340-60041) Direct Count Assembly. Verify that the knurled screw is firmly finger tight, securely holding board in position. Replace cover.

d. Adjust the threshold detector potentiometer A17A1 R22 full counterclockwise. This is accessible through the front hold in the A17 casting cover.

e. Adjust sensitivity potentiometer A17A1 R11 for a stable display.

f. Decrease signal generator output and again adjust A17A1 R11 for a stable display.

g. Continue to decrease signal generator output and adjust A17A1 R11 until maximum sensitivity is achieved.

h. Increase generator output until a stable reading is displayed.

i. Rotate threshold detector potentiometer A17A1 R22 fully clockwise, observing a display of all zeros.

j. Increase signal generator output by 1 dB from the level obtained in step h.

k. Rotate threshold detector potentiometer A17A1 R22 sufficiently counterclockwise until correct reading is always displayed.

l. Verify that sensitivity is at least -32 dBm. If not, perform A22R52 adjustment (step 11).

Figure 5-2. Adjustment Procedures (Continued)

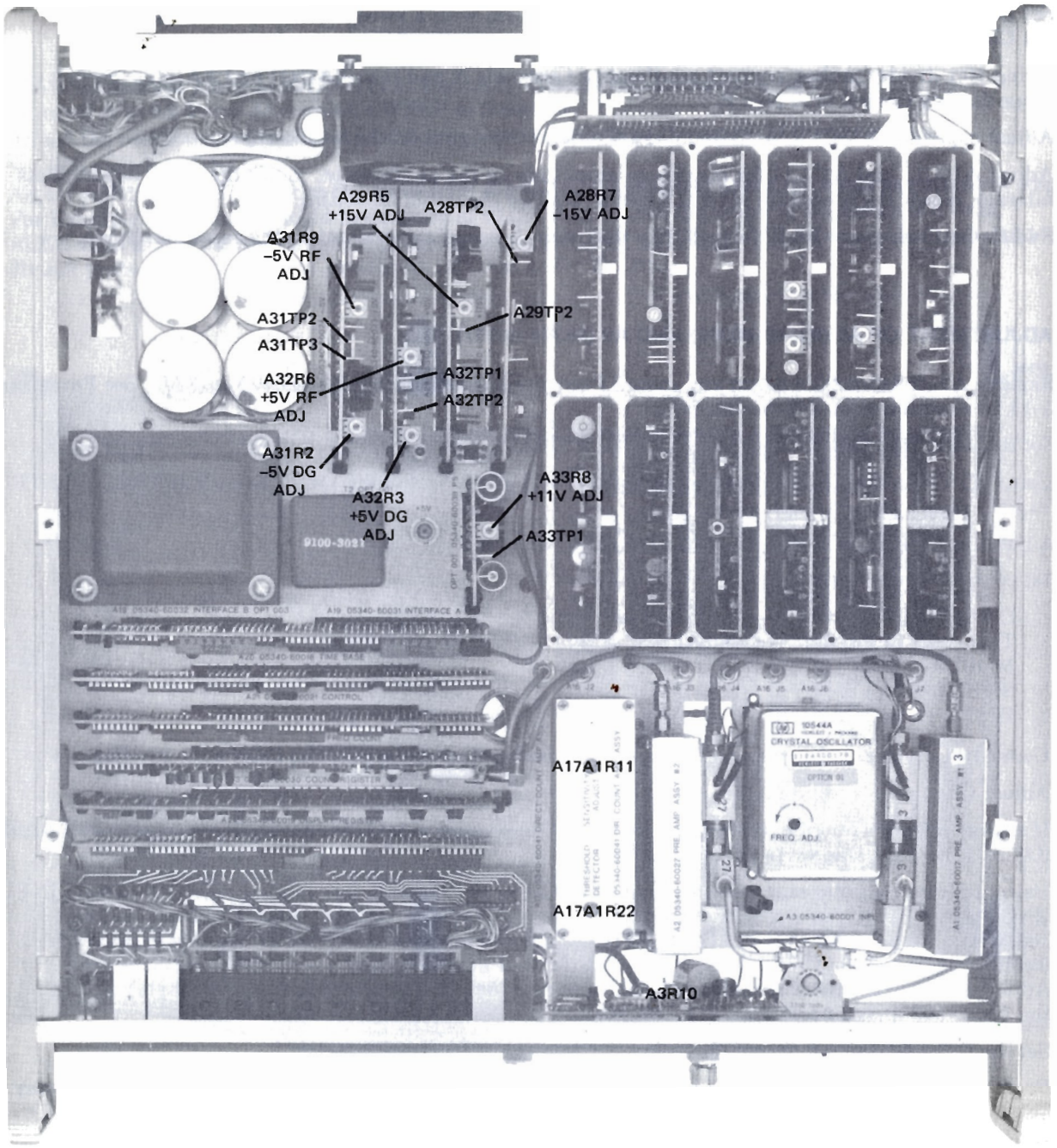


Figure 5-2. Adjustment Procedures (Continued)

4. 10 MHz DOUBLER ADJUSTMENT (05340-60012)

a. Remove the cover on the large casting by removing 12 screws. Locate A15 10 MHz Doubler Board (05340-60012). Do not remove board. Do not use an extender board.

b. Set Dual Trace Oscilloscope for sensitivity of 0.05 V/cm with a sweep time of 0.1 μsec/cm. Set Channel B polarity to "-" up and A to "+" up.

c. Using 10:1 divider probes, connect oscilloscope Channels A and B to XA15(1) and XA15(2). Switch oscilloscope display control to A plus B.

d. Adjust capacitor A15C3 for maximum amplitude of the signal on the oscilloscope.

e. Adjust A15C13 and A15C11 for maximum amplitude on the oscilloscope. Since these two adjustments interact, repeat the procedure several times to achieve the optimum setting.

f. Switch Oscilloscope to A&B only. Verify that signals are of approximately the same amplitude.

5. ADJUSTMENT OF A8 (05340-60006) AND A9 (05340-60007)

a. Remove A7 (05340-60005) board and install Feed-Forward Simulator K05-5340A in XA7. See Paragraph 5-13 for description of K05-5340A.

b. Set K05 switch to LOCK.

c. Using VTVM, measure feed-forward voltage (FF) from XA7(10) to ground. Adjust VOLTAGE CONTROL on K05-5340A for a 9.00 volt reading.

d. Adjust A8R13 (LEVEL) and A9R4 (GAIN) fully clockwise.

e. Set controls on Oscilloscope to:

CHANNEL A to 0.02 V/cm; AC coupled; + up
TRIGGER to internal; - slope; AC
MODE to Norm
SWEEP to 50 μs/cm
DISPLAY to CHANNEL A

f. Using 10:1 divider probe, connect Channel A of the oscilloscope to XA11(1) (MIX SIG. 20 kHz).

g. Adjust Channel A position to center the sine wave on the screen.

h. If a large misadjustment exists, no sine wave will be displayed on Channel A. If necessary, adjust A9R1 (OFFSET) until a sine wave is displayed.

i. Using BNC to alligator clip adaptor, connect "VCO #1 to Counter" signal (available at A16J6) to INPUT BNC on the 5340A. Set RANGE switch to "10 Hz to 250 MHz". Display should be between 100 to 185 MHz. Vary the K05 VOLTAGE CONTROL potentiometer so that counter displays a range of frequencies from 100 to 185 MHz and note the point of maximum distortion of the scope display. Adjust K05 potentiometer for maximum distortion of the sine wave and the counter display within the 100 to 185 MHz range.

j. Set the scope sweep to 5 μs/cm.

k. Back off A9R4 (GAIN) ccw just enough for minimum side jitter (phase noise) of the sine wave. It may be helpful to set the scope sweep to 2 μs/cm and 1 μs/cm to observe parts of the wave.

l. Connect a DVM to "TL Control" voltage, available at XA9(15).

m. Vary VOLTAGE CONTROL on K05 so counter display ranges from 100 to 185 MHz, and note the point "TL Control" voltage is maximum. Record this voltage. Vmax = _____ .

n. Find the point in the 100 -185 MHz range where "TL Control" voltage is minimum. Record this voltage. Vmin = _____ .

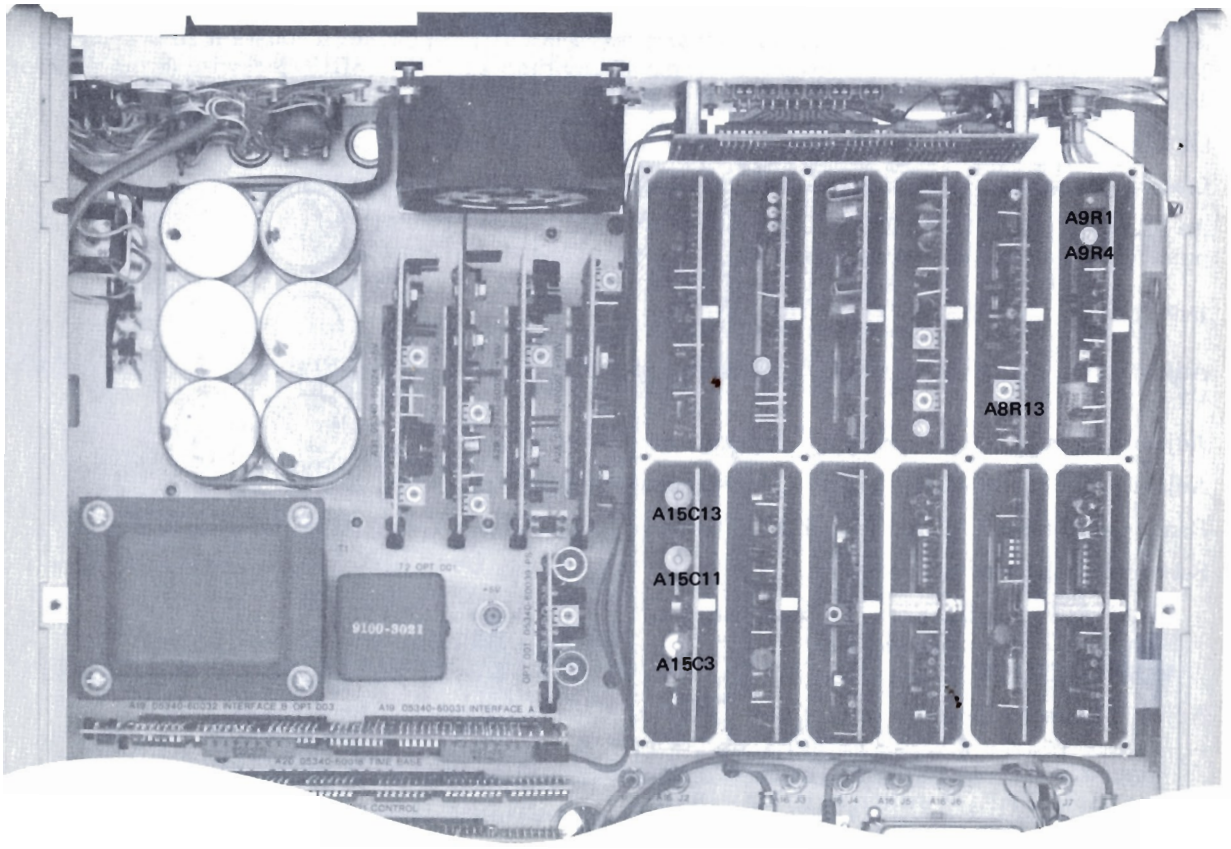
Figure 5-2. Adjustment Procedures (Continued)

o. Calculate the average value of the two voltages measured in steps n and o above by finding the algebraic sum of the voltages in step n and in step o and dividing by 2.

Example 1: V_{max} = +0.544 volts
V_{min} = +0.012 volts
+0.556 ÷ 2 = +0.278 volts

Example 2: V_{max} = 0.456 volts
V_{min} = -0.102 volts
+0.354 ÷ 2 = +0.177 volts

p. Move oscilloscope probe to XA10(7) (T.L. Control). Change oscilloscope controls: Channel A to 0.2 V/cm dc coupled, SWEEP to 5 ms/cm.
q. Adjust the oscilloscope Channel A position so zero volts dc is at the center of the screen.
r. Set K05 switch to UNLOCK.
s. Adjust A9R1 (OFFSET) so that the wave form display is symmetrical about the value calculated in step p. For Example 1, the ramp should be centered at +0.278 volts. Since the center of the screen is 0 volts, +0.278 volts is .139 cm above the center of the screen (+0.278V ÷ 2V/cm). The 2V/cm is due to the 10:1 divider probe and the 0.2V/cm sensitivity (.2V/cm x 10 = 2V/cm).



V

Figure 5-2. Adjustment Procedures (Continued)

6. A8R13 ADJUSTMENT (LEVEL)

a. Connect oscilloscope probe to XA11(1) (Mix sig 20 kHz). Set Channel A controls to 0.02 V/cm, ac coupled. Set SWEEP to 50 μs/cm.

b. Set K05 switch to LOCK and observe 20 kHz waveform.

c. Vary K05 VOLTAGE CONTROL so that the 5340A Display varies from 100 MHz to 185 MHz.

d. Adjust K05 VOLTAGE CONTROL so 150 MHz is displayed.

e. While continually flipping the K05 LOCK-UNLOCK switch, vary potentiometer A8R13 (LEVEL) counterclockwise until scope waveform jumps from 20 kHz to 40 kHz.

f. Set the K05 switch to LOCK. Vary potentiometer A8R13 clockwise until 20 kHz is again displayed.

g. Measure and record the voltage from the wiper of A8R13 to ground (easily accessible without removing A8) _____ volts.

h. Add 10% to the voltage obtained in step g. _____ volts + 10% = _____ volts.

i. Adjust A8R13 until voltage on its wiper equals that calculated in step h.

j. While constantly flipping the K05 LOCK-UNLOCK switch, vary K05 VOLTAGE CONTROL so that the 5340A display varies from 100 MHz to 185 MHz. Observe oscilloscope for a constant 20 kHz display. If 10 kHz, 30 kHz, or 40 kHz appears on the scope at any time, readjust A8R13 clockwise for an additional 10% voltage.

k. Change oscilloscope SWEEP to 5 μs/cm.

l. Observe the small transient (marker pulse) riding on the 20 kHz sine wave.

m. As K05 VOLTAGE CONTROL is varied for a 5340A display of 100 MHz to 185 MHz, observe marker pulse. It should not move more than ±5 μs (1 cm).

7. INPUT LOOP ADJUSTMENT

a. Adjust K05 for a 100 MHz display. Measure and record Feed-Forward (FF) signal, available at XA7(10). V1 = _____ .

b. Adjust K05 for a 150 MHz display. Measure and record FF. V2 = _____ .

c. Adjust K05 for a 185 MHz display. Measure and record FF. V3 = _____ .

d. Remove K05 from XA7 and install A7. Disconnect all other test connections.

e. Set oscilloscope controls:

CHANNEL A to 0.2 V/cm; DC coupled: + up
SYNC to INT, + slope, AC
MODE to NORM
SWEEP to 10 ms/cm
DISPLAY to CHANNEL A

f. Adjust Channel A position so that zero volts is at the bottom graticule on the screen.

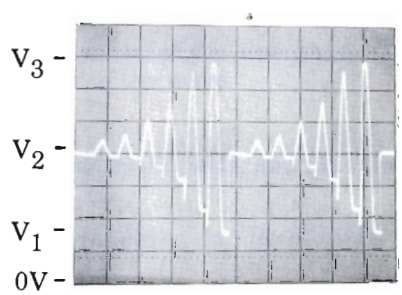
g. Using 10:1 divider probes, connect Channel A to Feed-Forward (FF) signal available at XA7(10).

h. Set the 5340A RANGE switch to 10 Hz - 18 GHz and RESOLUTION switch to 100 Hz.

i. Set A7R27 (GAIN) fully clockwise.

j. Adjust A7R13 (BAL) so that the level start and end of the waveform is at V2 measured in step b.

k. Adjust A7R25 (AMP) and A5R15 (DC ADJ) until excursion of the waveform goes from V1 to V3. See waveform shown at right.



l. Disconnect all test connections.

Figure 5-2. Adjustment Procedures (Continued)

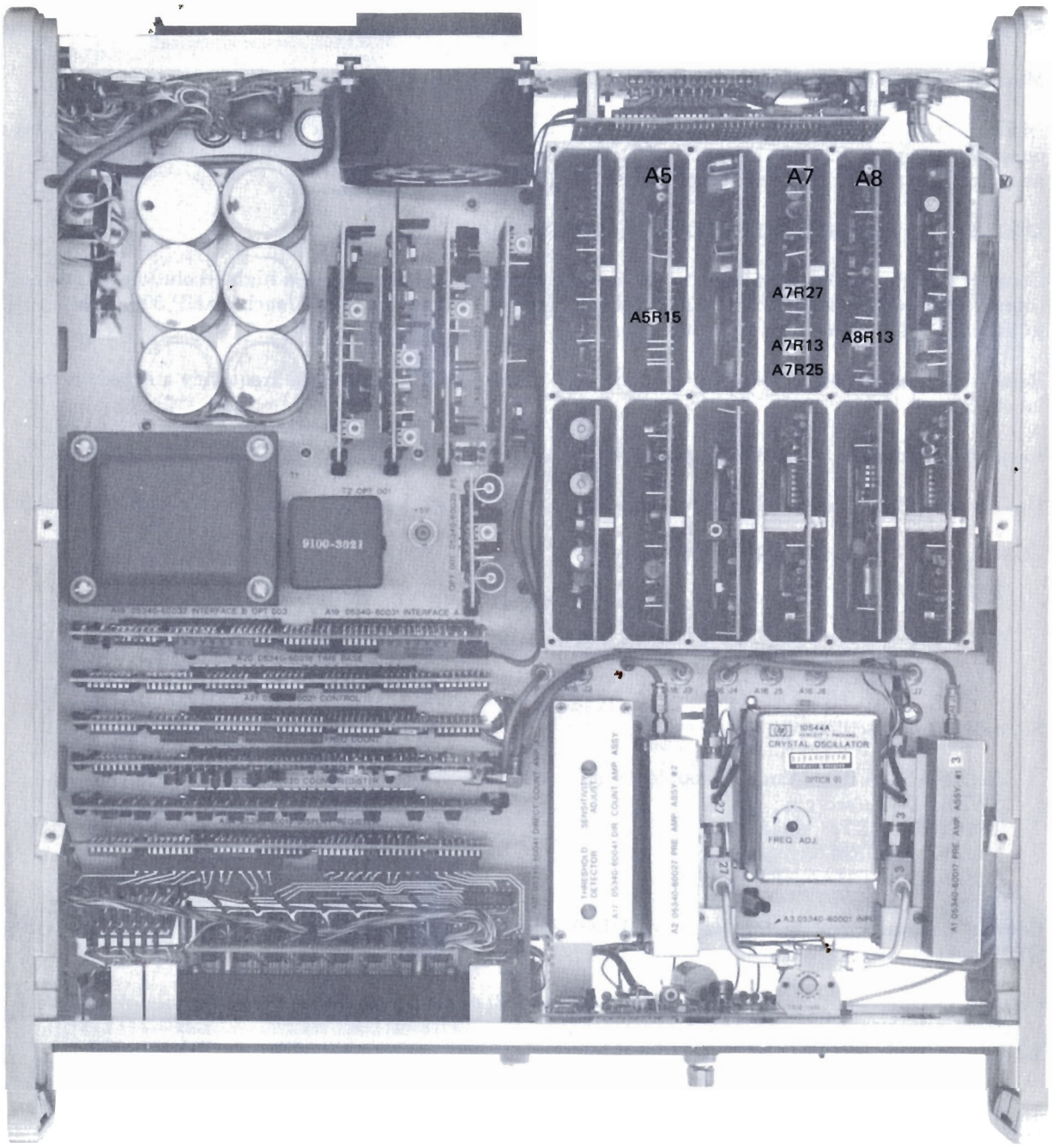


Figure 5-2. Adjustment Procedures (Continued)

8. QUAD DETECTOR ADJUSTMENT

a. Set 5340A RANGE switch to 10 Hz to 18 GHz and the RESOLUTION switch to 100 Hz.

b. Connect 608 Signal Generator to 50Ω Type N INPUT. Set generator to 280 MHz at -20 dBm.

c. Set A13R31 fully counterclockwise.

d. Measure voltage at XA4(8) (QUAD DET) and set A13R31 for -450 mV ± 10 mV.

e. Disconnect 280 MHz signal and connect 20 GHz at 0 dBm and observe a stable display. If the display is unstable, adjust A7R27 (GAIN) counterclockwise for a stable display. If this adjustment is made, it is necessary to readjust the input loop. Repeat step 7.

9. OSCILLATOR ADJUSTMENT — STANDARD OSCILLATOR

a. Connect J3 OSC output, available on the 5340A rear panel to the input of a high resolution frequency counter such as a 5360A. Connect a suitable external frequency standard (such as HP 5061 Cesium Beam) to the external oscillator input of the 5360A.

b. Remove the A18 05340-60036 Oscillator board from the 5340A and note the frequency marked on the label. Reinstall the board.

c. Remove the screw covering the frequency adjustment.

d. Use an insulated tuning tool to adjust the oscillator for a 5360A display of the frequency noted in step b.

10. OSCILLATOR ADJUSTMENT — OPTION 001

NOTE

The 5340A must have primary power applied for at least 24 hours to allow the oscillator temperature to stabilize.

a. Set controls on oscilloscope as follows:

CHANNEL A 0.2 V/cm; DC coupled; + up
SWEEP 0.05 μsec/cm
TRIGGER; EXT, + slope, ACF
MODE to NORM
DISPLAY to CHANNEL A

b. Connect a suitable 1 MHz, 5 MHz or 10 MHz frequency standard (such as an HP Cesium Beam) to the EXT Input on oscilloscope.

c. Connect Oscilloscope Channel A to 10 MHz output (J3) available on 5340A rear panel.

d. Adjust oscillator FREQUENCY ADJ for minimum sideways movement of the oscillator signal.

Figure 5-2. Adjustment Procedures (Continued)

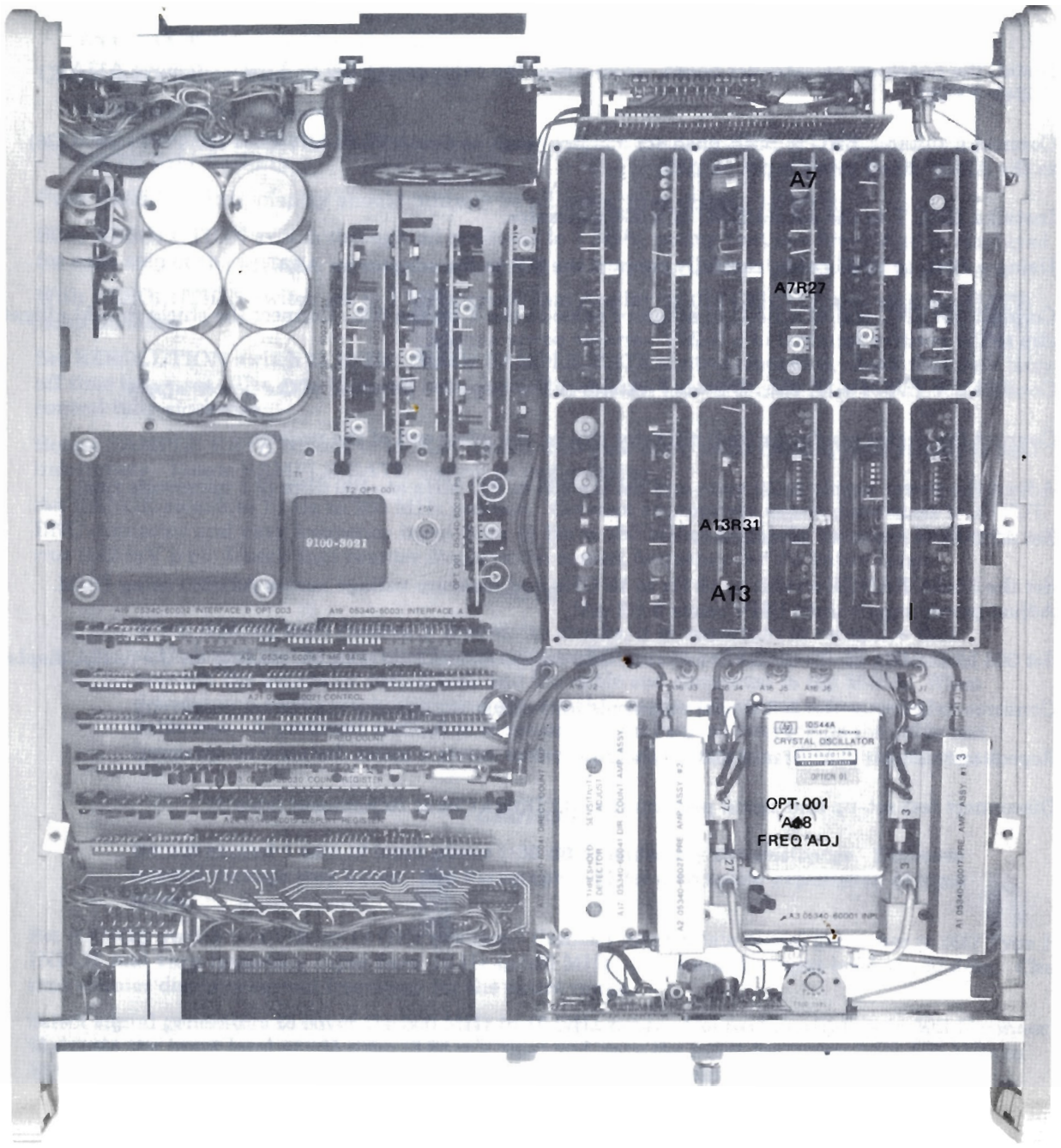


Figure 5-2. Adjustement Procedures (Continued)

11. A22R52 ADJUSTMENT

NOTE

This adjustment is set and sealed at the factory for optimal sensitivity and should be adjusted only if A22U9 is replaced or if the 5340A will not meet the sensitivity test in step 3.

a. Install the board on an extender board. Disconnect the cable connected to A22J1. Remove A17A1 (05340-60038).

b. Connect a suitable BNC to SMB push-on adaptor (such as Sealectro 51-077-6801 HP P/N 1250-1236) to the A22J1 direct count input on A22.

c. Install a BNC T to the output BNC of a 608 generator.

d. Using a BNC to BNC cable, carefully connect the 608 to the adaptor on A22J1.

e. Connect the BNC end of a BNC to alligator cable to the T on the 608. Connect the shield (black) alligator clip to the positive terminal of a 0-20V variable power supply.

f. Connect one end of a 1K ohm 1/4 watt resistor to the negative terminal of the power supply.

g. Connect the center conductor (red) alligator clip to the other end of the resistor.

h. Adjust the power supply to 10 volts and set the 608 to 300 MHz at -100 dBm (2.2 microvolts rms).

i. Set A22R52 to center of adjustment.

j. Set the 5340A RANGE switch to 10 Hz to 18 GHz and measure voltage across A22R30 using DVM. Adjust power supply until DMV reads 0 ± 2 mV.

k. Set 608 to 12 MHz at -10 dBm (70 mV rms) and adjust A22R52 for a stable reading on the 5340A display.

l. Continue to decrease the 608 signal amplitude and adjust A22R52 for maximum sensitivity.

m. Repeat test using 110 MHz and 250 MHz signals.

n. Disconnect test set-up and again perform the 50Ω Direct Count Adjustment (step 3).

V

Table 5-3. In-Cabinet Performance Check

1. On rear panel of 5340A, set SELECTOR switch to correspond with the line voltage to be used (115V or 230V). Install correct line fuse, connect counter to power source.
2. Set 5340A controls as follows:

 LINE switch to ON
 RESOLUTION switch to 1 Hz
 SAMPLE RATE control fully counterclockwise
 RANGE switch to CHK
 INT-EXT switch (rear panel) to INT.
3. Check that counter displays the following:

 10.000 000 MHz ±1 count
 DIR (direct) annunciator lighted
 GATE light flashing
4. Push RESET switch, display should initially be all zeros, then display 10 MHz.
5. Slide RESOLUTION switch through all positions to 1 MHz, noting that one fewer digit is displayed for each step of the switch.
6. With RESOLUTION switch set to 1 MHz, check that display is .010 GHz ±1 count with the GATE lamp flashing.
7. Set RESOLUTION switch to 10 Hz. Rotate SAMPLE RATE control clockwise, check that gate lamp off time increases. The gate lamp off time should be at least 5 seconds with the SAMPLE RATE control fully clockwise.
8. Rotate SAMPLE RATE control to HOLD. Check that gate lamp stops flashing and display is held indefinitely. Rotate SAMPLE RATE control to mid-position.
9. Set RANGE switch to 10 Hz to 250 MHz position. Connect appropriate signal generators to INPUT BNC connector and vary frequency input from 10 Hz to 250 MHz. Maintain the input level at 50 mV rms (142 mV p-p). Check that counter displays the correct frequency for the entire range.

NOTE

When making high frequency sensitivity checks, it is important to recognize that cable losses can be appreciable. Amplitude differences as high as 20 dB can exist between the generator output jack and the cable end connected to the 5340A. When determining sensitivity using generators with a calibrated output meter, include cable loss. A preferred method is to measure actual signal strength at the cable end (properly terminated) using a power meter capable of measuring the signal of interest.

CAUTION

Do not exceed 1 watt of input power (+30 dBm) under any circumstances. Extensive internal damage may occur. See Paragraph 3-22 for a complete explanation of input levels.

10. Set RANGE switch to 10 Hz to 18 GHz position. Connect appropriate signal generator to 50Ω Type N INPUT and vary frequency input from 10 Hz to 500 MHz. Maintain the input level at -30 dBm. Check that counter displays correct frequency for the entire range.
11. Select signal generators to cover the 500 MHz to 10 GHz range. Connect generators to 50Ω N connector. Maintain the input level at -35 dBm (3.98 mV rms) and vary the input frequency from 500 MHz to 10 GHz. Check that counter displays correct frequency for the entire range.
12. Repeat step 11 for the 10.0 GHz to 18 GHz range maintaining the input level at -25 dBm (12.6 mV rms).
13. Set RANGE switch to 250 MHz to 18 GHz and repeat steps 11 and 12.
14. On 5340A rear panel, set INT-EXT switch to EXT. Connect a 10 MHz signal at 1.5V p-p to 10 MHz INPUT BNC connector. Check that 5340A operates properly. Disconnect the 10 MHz signal, and set INT-EXT switch to INT.
15. On 5340A rear panel, measure signal at 10 MHz OUTPUT connector using 10:1 divider probe on an oscilloscope. Check that oscilloscope displays a 10 MHz signal with at least a 2.4V p-p amplitude.

5-16. PROGRAM CONTROL FLOW DIAGRAMS

5-17. Figures 5-3 and 5-4 are flow diagrams showing the sequence of actions required in making a measurement. Figure 5-3 is a simplified version of Figure 5-4. The A21 Control Board theory explains how decisions are made in the flow diagram. See Paragraph 4-236.

5-18. Figure 5-4 lists three sets of numbers: the program address, the selected test number, and selected action number.

5-19. The program address is the 5-bit binary number placed to the right of the rectangle and diamond symbols in the diagram. These 5 bits are the inputs to ROM's A21U3 and A21U4. When an HP 10528A Logic Clip is installed on A21U4, the program address appears on pins 10 through 14. Note that the logic clip diagram shown on Figure 5-4 uses circles to designate these pins.

5-20. Inside each rectangle is a decimal number that indicates what action is required and this corresponds to the action of A21U13. This number can be read in binary on pins 5, 6, 7, and 9 of A21U4. These pins have binary weights 1, 2, 4, and 8, respectively. To determine the required action, add the binary weights of the pins activated.

5-21. For example, if A21U4 pins 5, 6, and 7 were TTL High (indicated by a lit LED), the required action is (1 + 2 + 4) = 7. Note that the four pins designating action data are diagrammed as rectangles in the logic clip diagram to correspond with the rectangles of the flow diagram.

5-22. Decision points are indicated by diamonds and the associated decimal number indicates the test required. This number, which corresponds to the number in A21U12, can similarly be read on the logic clip on the pins designated with diamonds in the diagram. Note that this corresponds to the diamond shapes on the flow chart.

5-23. It may be possible to single step the 5340A through the flow diagram to check for proper branching. Refer to A21 Troubleshooting.

V

Figure 5-3. Simplified Flow Diagram of 5340A Program Control

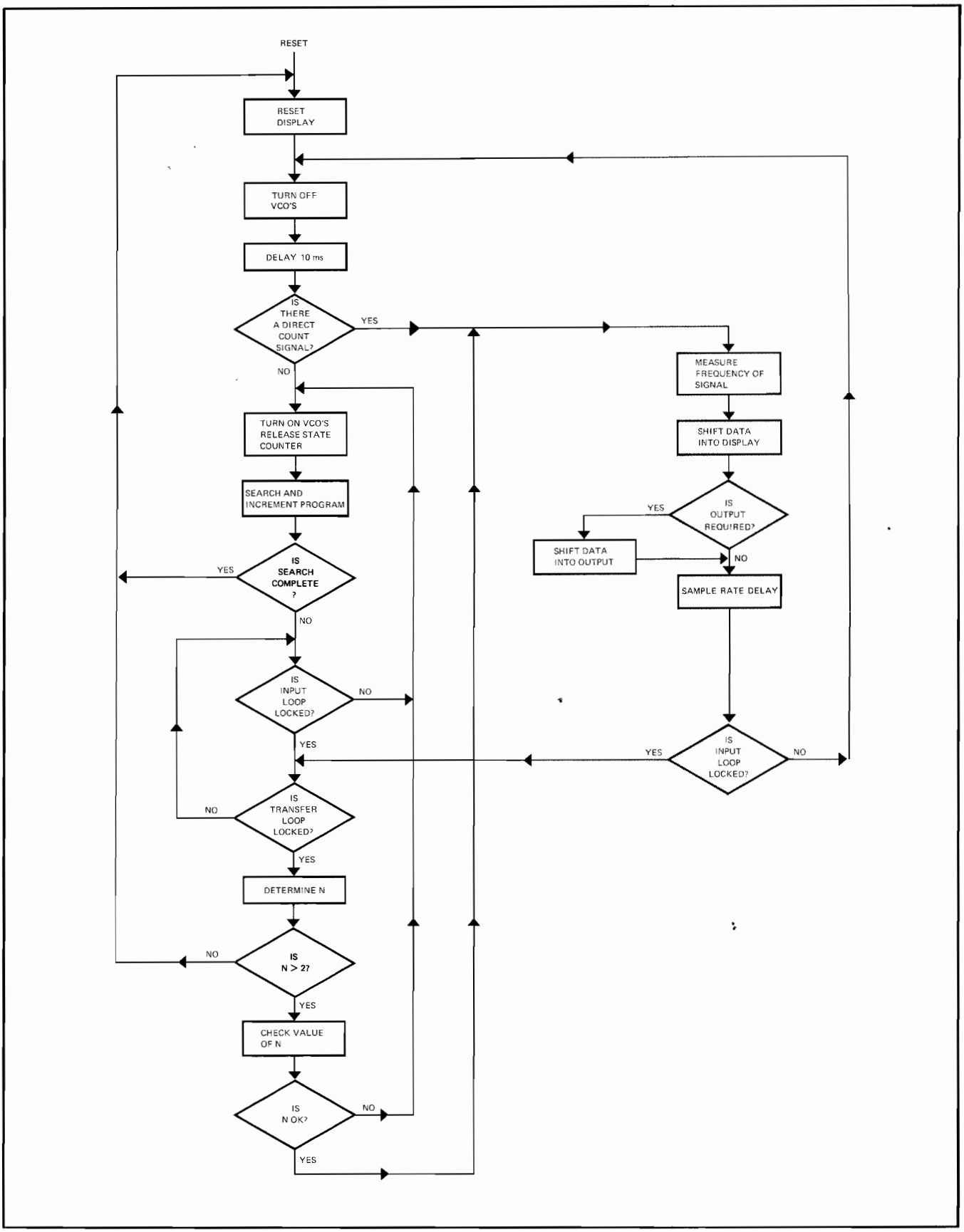
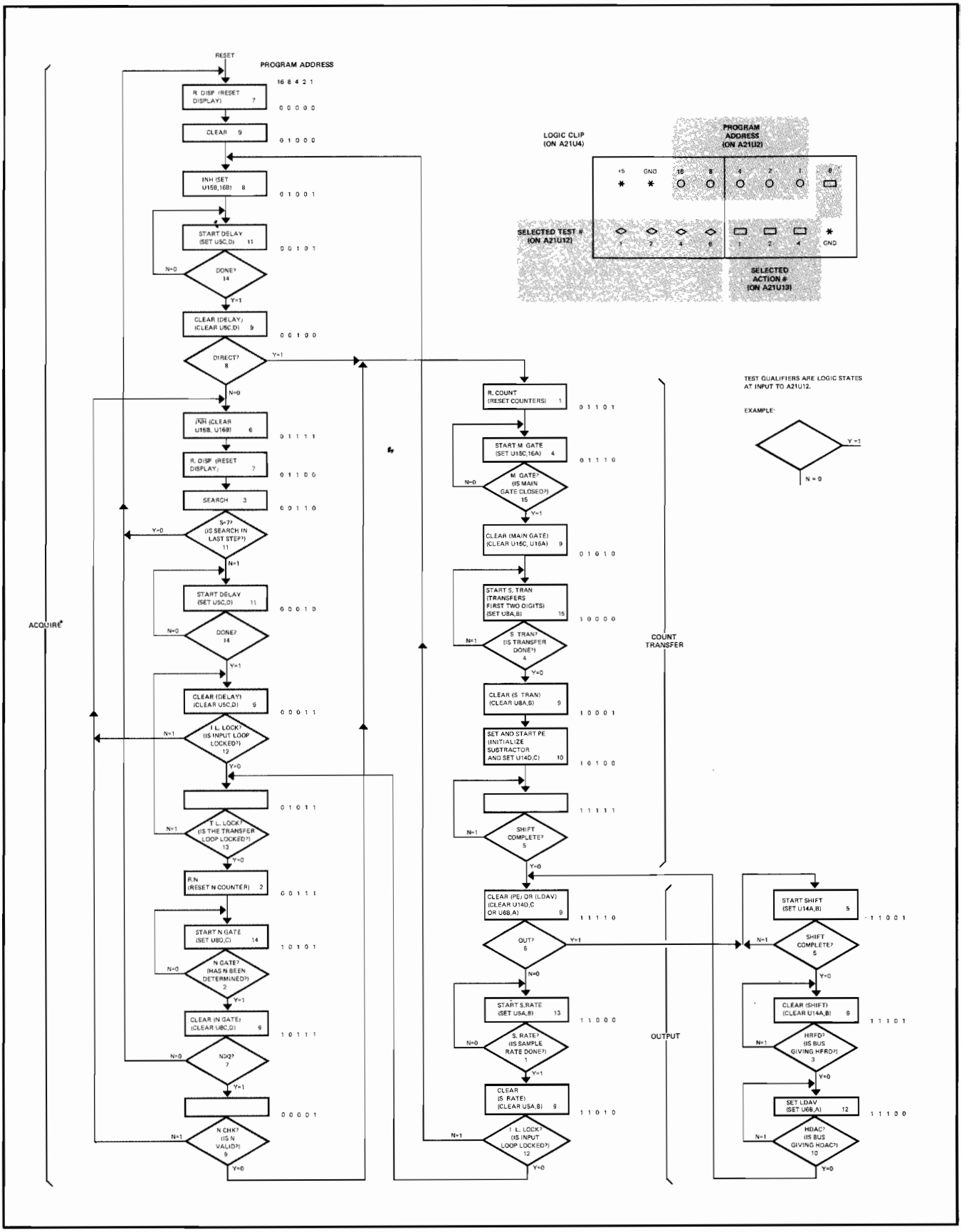


Figure 5-4. Troubleshooting Flow Diagram with HP Logic Clip



PERFORMANCE CHECK TEST CARD

HEWLETT-PACKARD MODEL 5340A
FREQUENCY COUNTER

Test Performed by _____
Date _____

DESCRIPTION		CHECK
3. SELF-CHECK	_____	Counter displays 10.000 000 MHz ±1 count.
	_____	DIR annunciator lights.
	_____	GATE light flashes.
4. RESET	_____	Resets to zero.
5. RESOLUTION	_____	Proper significant digits displayed for each setting of RESOLUTION switch.
7. SAMPLE RATE	_____	Sample rate variable to 5 seconds.
8. SAMPLE RATE HOLD	_____	Display is held.
9. FREQUENCY RANGE 10 Hz-250 MHz (Hi-Z INPUT)	_____	10 Hz to 250 MHz at 50 mV sensitivity.
10. FREQUENCY RANGE 10 Hz-500 MHz (50Ω INPUT)	_____	10 Hz to 500 MHz at -30 dBm sensitivity.
11. FREQUENCY RANGE 500 MHz-10 GHz (50Ω INPUT)	_____	500 MHz to 10 GHz at -35 dBm sensitivity.
12. FREQUENCY RANGE 10 GHz-18 GHz (50Ω INPUT)	_____	10 GHz to 18 GHz at -25 dBm sensitivity.
14. 10 MHz INPUT BNC (Rear Panel)	_____	Proper external time base operation.
15. 10 MHz OUTPUT (Rear Panel)	_____	10 MHz at >2.4V p-p.

V

5-24. OVERALL TROUBLESHOOTING

5-25. Proceed with these tests in the order listed.

a. Set 5340A controls as follows:

RESOLUTION to 1K
SAMPLE RATE to max ccw
RANGE to CHK
OSC (rear panel) to INT
115/230 V Selector (rear panel) to match line voltage being used.
LINE (front panel) to ON
Check that the GATE lamp flashes. The display should be 10.000 MHz ±1 count.
Check that DIRect lamp flashes. Move the RESOLUTION switch through all of its positions and observe the display.

Resolution	Display ±1 Count
1	10.000000 MHz
10	10.00000 MHz
100	10.0000 MHz
1 K	10.000 MHz
10 K	10.00 MHz
100 K	10.0 MHz
1 M	.010 GHz

If the 5340A fails any of these tests, go to Troubleshooting Chart #1 of Figure 5-5.

b. Connect a 220 MHz signal at 0 dBm (644 mV p-p) to the 1 MΩ input using a 50Ω feedthru termination. Move RANGE switch to "10 Hz to 250 MHz" and RESOLUTION to 1 K.

The GATE lamp should flash, the DIRect lamp should be lit and the counter should display the correct frequency for all positions of the RESOLUTION switch.

If the 5340A fails any of the above, go to Troubleshooting Chart #2 of Figure 5-5.

c. Connect the signal to the 50Ω INPUT, move RANGE switch to "10 Hz to 18 GHz", RESOLUTION switch to 1 kHz. The GATE lamp should flash, the DIRect lamp should be lit and the counter should display the correct frequency for all positions of the RESOLUTION switch.

d. Change input frequency to 280 MHz 0 dBm. Move the RANGE switch to the "250 MHz to 18 GHz" position. The LOCK lamp should now light, the GATE lamp should continue to flash and the counter should display the correct frequency (280 MHz) for all positions of the RESOLUTION switch.

If this test is failed, go to Troubleshooting Chart #4 (Figure 5-5).

e. For each position of the RESOLUTION switch, move the RANGE switch between "250 MHz to 18 GHz" and "10 Hz to 18 GHz". The display frequencies should agree within 1 count.

If this test fails, determine which frequency is incorrect and use Troubleshooting Chart #3 or #4 (Figure 5-5).

5-26. A20 N Checker Troubleshooting

5-27. Remove A5 05340-60003 from 5340A and place A20 on an extender. Short A21(22) to chassis. Unsolder the wire connected to XA20(W).

5-28. Connect the output of an HP Model 651A signal generator to the external trigger input of an HP Model 222A pulse generator. Disconnect the harmonic frequency cable connected to A16J2. Use suitable push-on to BNC (such as Sealectro 50-074-6800, HP P/N 1250-0831) and connect the cable to the output of the pulse generator.

5-29. Set 651A frequency to 40 kHz at 0.8V rms

222A pulse polarity to +
222A rep rate to man/ext +
222A pulse delay to .1
222A pulse width to .03 - .05
vernier to mid-position
222A pulse amplitude to 5
vernier to mid-position
5340A RANGE switch to 250 MHz - 18 GHz
5340A RESOLUTION switch to 10 K

Signal Generator Frequency	N	Range No.	XA19B(S) Binary 4	XA19B(R) Binary 2	XA19B(P) Binary 1	5340A Display
20 kHz	1	6			x	all zeros
40 kHz	2	6			x	some number
80 kHz	4	6			x	some number
100 kHz	5	6			x	all zeros
60 kHz	3	5		x		all zeros
80 kHz	4	5		x		some number
160 kHz	8	5		x		some number
180 kHz	9	5		x		all zeros
140 kHz	7	4		x	x	all zeros
160 kHz	8	4		x	x	some number
320 kHz	16	4		x	x	some number
340 kHz	17	4		x	x	all zeros
300 kHz	15	3	x			all zeros
320 kHz	16	3	x			some number
640 kHz	32	3	x			some number
660 kHz	33	3	x			all zeros
620 kHz	31	2	x		x	all zeros
640 kHz	32	2	x		x	some number
1.28 MHz	64	2	x		x	some number
1.30 MHz	65	2	x		x	all zeros
1.26 MHz	63	1	x	x		all zeros
1.28 MHz	64	1	x	x		some number
2.56 MHz	128	1	x	x		some number
5.10 MHz	255	1	x	x		all zeros

5-30. In this test the various possible values of N will be simulated by varying the signal generator frequency as shown in the table below. The range will be simulated by jumpering three connections to chassis. Note that there are six groups of four measurements. The first checks that N is outside the lower limit; the fourth checks that N is outside the upper limit. The second and third check that N is within limits.

5-31. There will be two types of test results: The 5340A will display all zeros or it will display some number. For the first and fourth test in each group, the 5340A should display all zeros. The second and third test should cause a number to be displayed, which is approximately N times 150 MHz. The exact value of the display is not important; it is important to note if the display is all zeros or some number.

5-32. To simulate the RANGE setting, connect to chassis pin connections XA19B(S), XA19B(R), XA19B(P) when designated by an X. These pins, which have binary weights 4, 2, and 1, respectively, are positive true. Thus to simulate Range #6, do not short cut Binary 4 and Binary 2.

5-33. If any test fails, first check the action of the range binary to decimal decoder, which should output a TTL Low for the selected range. For example, when XA19B(P) is shorted to chassis (selecting Range #6) the 6 output (pin 7) of the IC should be TTL Low. All others should be TTL High. The decoder is U27 on A20 05340-60018 and U28 on A20 05340-60067. If the first test in a group fails, check the action of the lower limit comparators. This is U19 and U20 on both 05340-60018 and 05340-60067. If the fourth test fails, check the action of the upper limit comparators (U25 and U26 on 05340-60018 and U26 and U27 on 05340-60067). If the second or third test fails, check both sets. These can easily be tested using a logic comparator.

5-34. Check also the output of the binary N counters for agreement with the value of N listed in the table. This is U12 and U21 on 05340-60018 and U6 and U7 on 05340-60067. Check also the associated inverters.

5-35. A21 Troubleshooting

5-36. Disconnect jumper W2 on A20 and install logic clip on A21 U4. Push front panel RESET pushbutton.

5-37. Use HP 10526T Pulser on A21U2(9) and step through the program. Check for proper branching per Figure 5-4. If the program address will not increment, (locked in a loop) determine from Figure 5-4 which test or action is not being completed. Then check A21U12 or U13 to verify that proper selection is taking place there. If that is OK, trace the circuit to find the cause of the failure.

5-38. If incorrect branching is occurring, a test is giving incorrect results or the A21 circuitry is interpreting it incorrectly. Check the input of A21U12 for proper test logic levels, as noted in Figure 5-4.

5-39. Power Supply Troubleshooting

a. Determine which power supplies are regulating at an incorrect voltage by measuring the output voltage.

b. If any supply is at or near zero volts, the supply could be current limiting. Disconnect the output leads for that supply at the A30 power supply motherboard.

c. Again measure the voltage. If the output is still bad, the failure exists in the power supply circuit. Use the typical voltage charts shown to isolate the defective components.

d. If the output obtained in step 3 is now good, there could be a short circuit in the instrument, or the supply could be current-limiting improperly. Substitute a resistive load for the supply under test as listed on the next page.

e. If the output is still good, an excessive load exists somewhere in the instrument. Connect an ohmmeter between ground and on the feeder line in question (which is still disconnected from its power supply). Start removing the plug-in PC boards until a significant change is observed on the ohmmeter. Then isolate the execessive load. Check also for shorted wires.

f. If the output obtained in step 4 is bad, the power supply is not able to provide the necessary current. Use the typical voltage charts to isolate to the defective component. Look especially for the same voltage on any two leads of a transistor, indicating a shorted transistor.

	Resistance	Wattage
+5V loop	15Ω	2W
-5V digital	20Ω	2W
-5V loop	28Ω	1W
+5V digital	7.5Ω	4W
+15	75Ω	5W
-15	75Ω	5W
+175	7.5K	3W
+11V (Option 001)	500Ω	1/8W

V

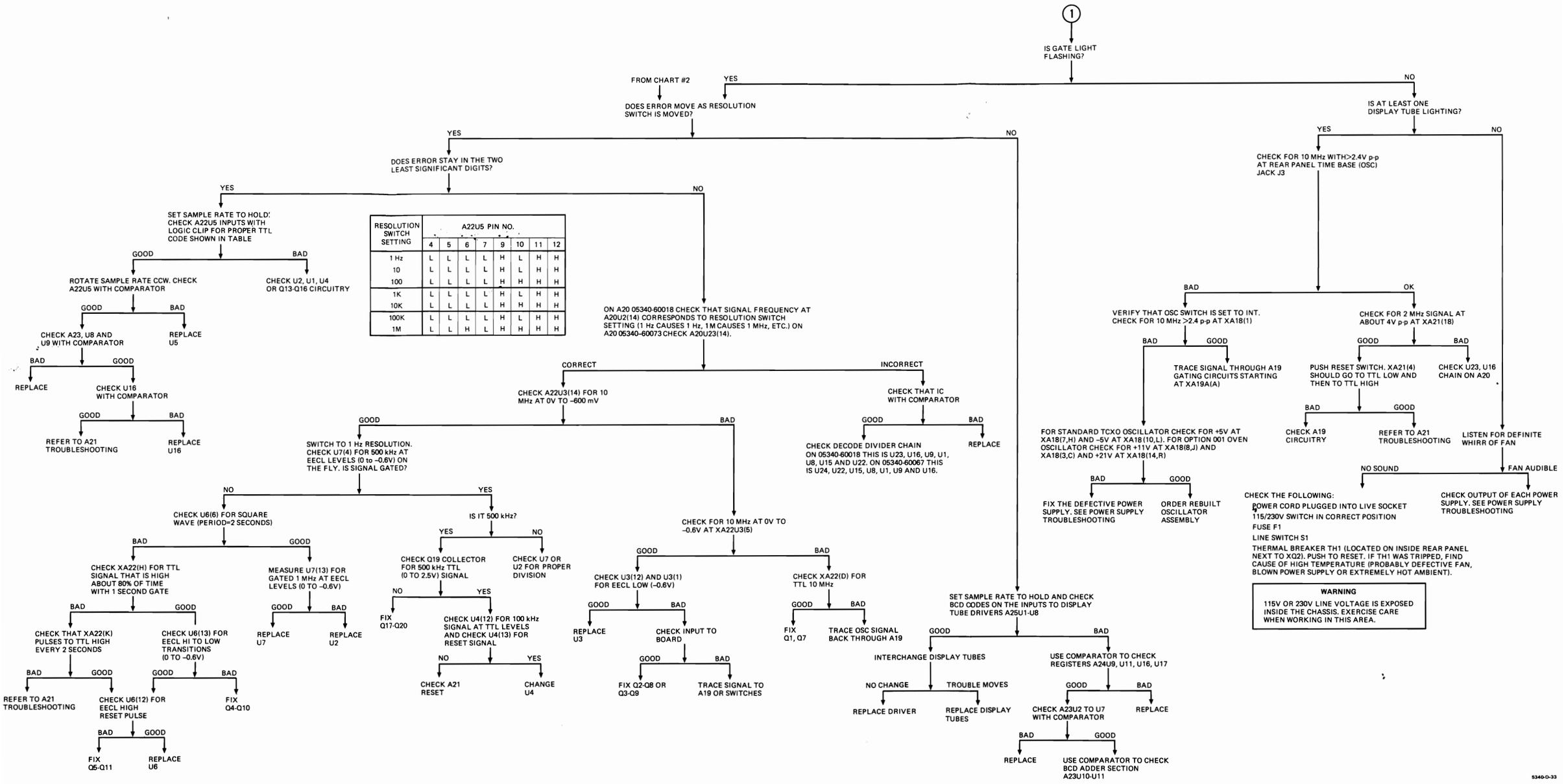
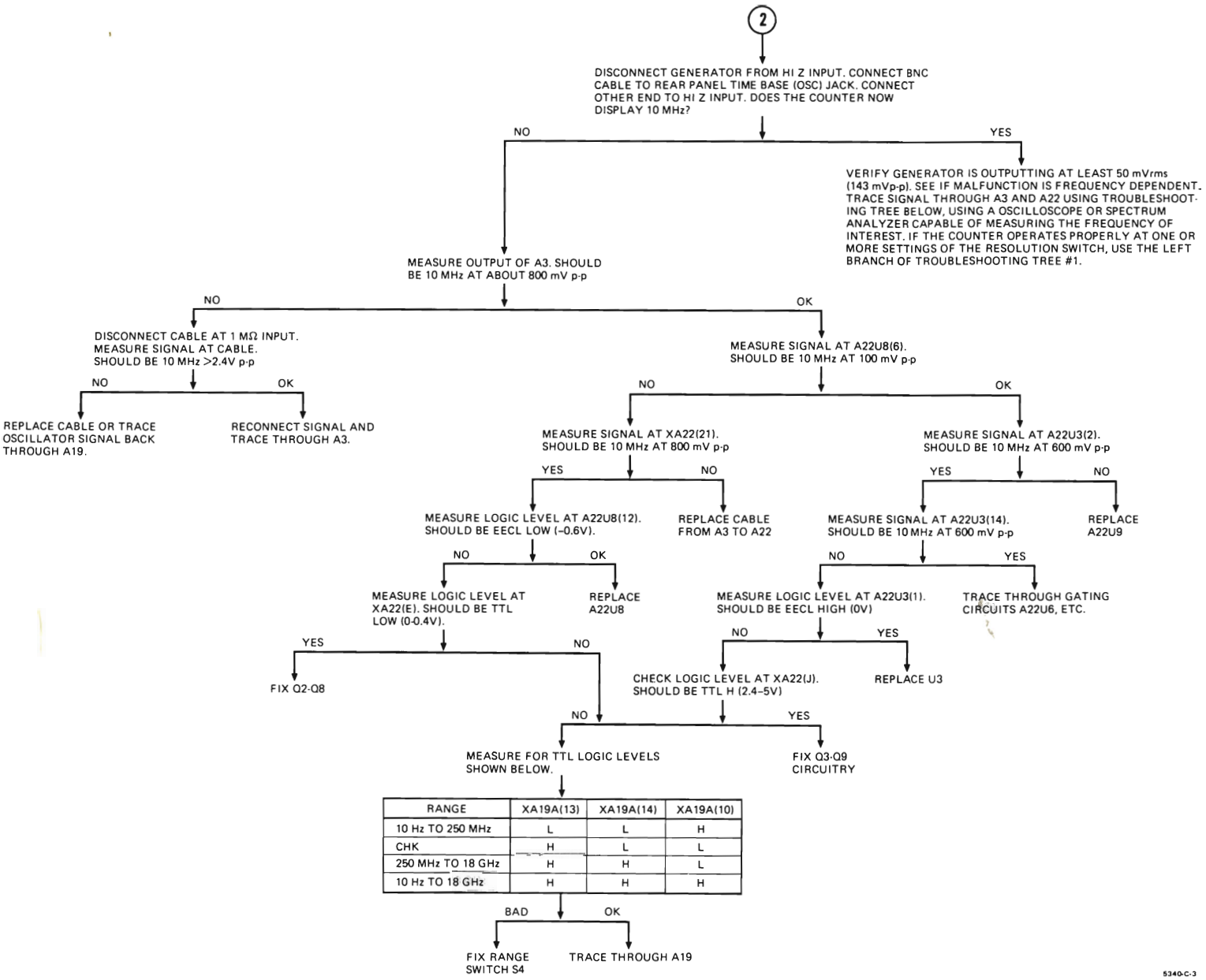


Figure 5-5. Troubleshooting Charts
(Sheet 1 of 3)



RANGE	XA19A(13)	XA19A(14)	XA19A(10)
10 Hz TO 250 MHz	L	L	H
CHK	H	L	L
250 MHz TO 18 GHz	H	H	L
10 Hz TO 18 GHz	H	H	H

5340-C-3

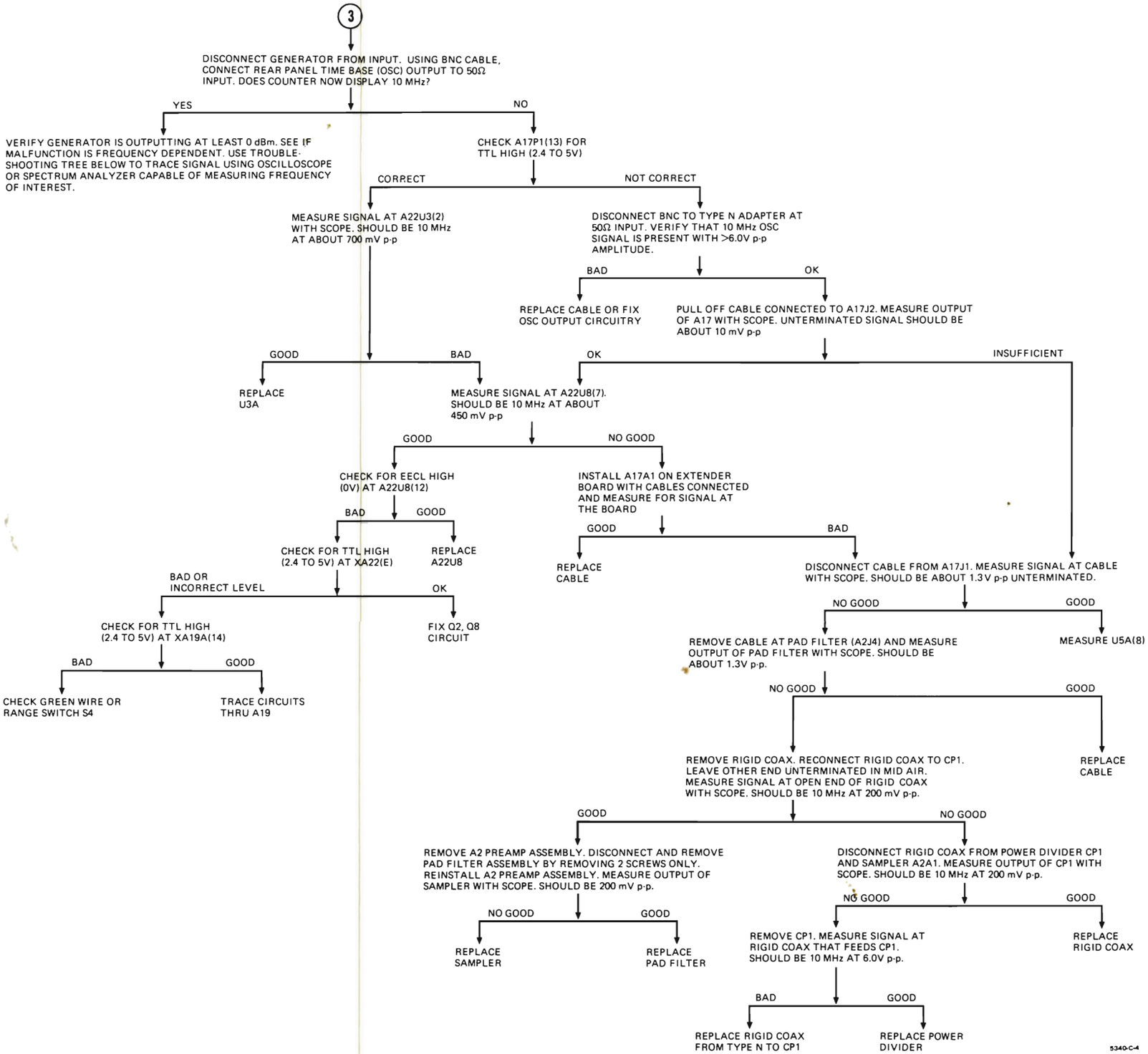


Figure 5-5. Troubleshooting Charts
(Sheet 2 of 3)

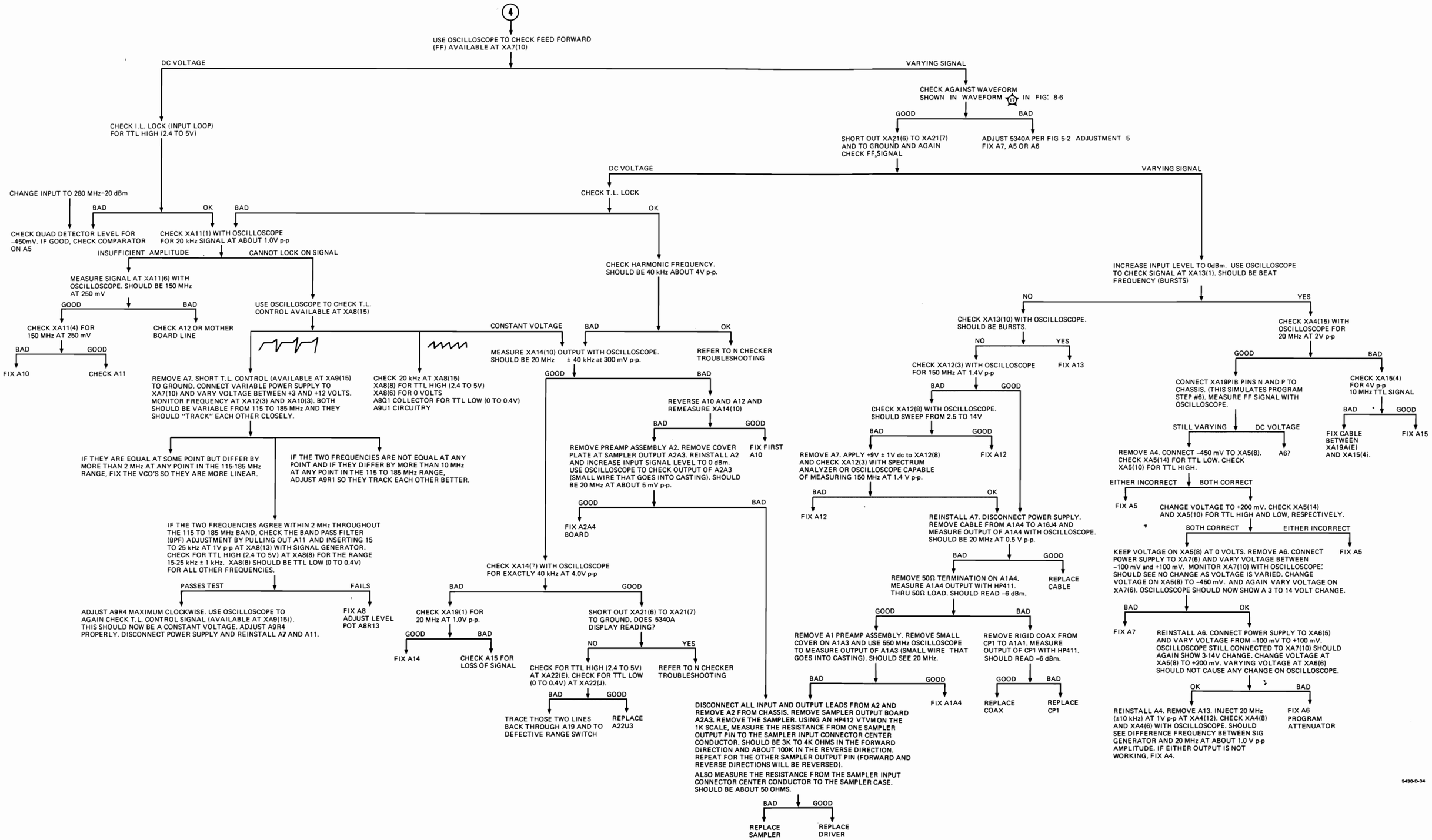


Figure 5-5. Troubleshooting Charts
(Sheet 3 of 3)

SECTION VI

REPLACEABLE PARTS

6-1. INTRODUCTION

6-2. This section contains information for ordering replaceable parts. Table 6-1 lists replaceable parts for the standard instrument without options. Tables 6-3 through 6-5 list replaceable parts for Options 001, 002, and 003, respectively. Table 6-2 and Figure 6-1 cover the mechanical parts. Table 6-6 contains a list of manufacturers and their codes.

6-3. Parts are listed in alpha-numerical order of their reference designator starting with A1 and ending with chassis and miscellaneous parts. The replaceable parts tables include the following information.

a. Reference designator (when applicable).

b. HP part number.

c. Total quantity (Qty) used in the instrument. The quantity appears in the Qty column the first time that the part is listed. Table 6-1 gives Qty for the standard instrument only. To tabulate a parts list for an instrument with options, add and delete the parts as directed in the Option tables.

d. Description of the part (see abbreviations below).

REFERENCE DESIGNATIONS

A	= assembly	E	= miscellaneous electrical part	P	= electrical connector (movable portion); plug	U	= integrated circuit; microcircuit
AT	= attenuator; isolator; termination	F	= fuse	Q	= transistor; SCR; triode thyristor	V	= electron tube
B	= fan; motor	FL	= filter	R	= resistor	VR	= voltage regulator; breakdown diode
BT	= battery	H	= hardware	RT	= thermistor	W	= cable; transmission path; wire
C	= capacitor	HY	= circulator	S	= switch	X	= socket
CP	= coupler	J	= electrical connector (stationary portion); jack	T	= transformer	Y	= crystal unit-piezoelectric
CR	= diode; diode thyristor; varactor	K	= relay	TB	= terminal board	Z	= tuned cavity; tuned circuit
DC	= directional coupler	L	= coil; inductor	TC	= thermocouple		
DL	= delay line	M	= meter	TP	= test point		
DS	= annunciator; signaling device (audible or visual); lamp; LED	MP	= miscellaneous mechanical part				

ABBREVIATIONS

A	= ampere	avg	= average	CHAN	= channel	dc	= direct current
ac	= alternating current	AWG	= American wire gauge	cm	= centimeter	deg	= degree (temperature interval or difference)
ACCESS	= accessory	BAL	= balance	CMO	= cabinet mount only	...°	= degree (plane angle)
ADJ	= adjustment	BCD	= binary coded decimal	COAX	= coaxial	°C	= degree Celsius (centigrade)
A/D	= analog-to-digital	BD	= board	COEF	= coefficient	°F	= degree Fahrenheit
AF	= audio frequency	BE CU	= beryllium copper	COM	= common	°K	= degree Kelvin
AFC	= automatic frequency control	BFO	= beat frequency oscillator	COMP	= composition	DEPC	= deposited carbon
AGC	= automatic gain control	BH	= binder head	COMPL	= complete	DET	= detector
AL	= aluminum	BKDN	= breakdown	CONN	= connector	diam	= diameter
ALC	= automatic level control	BP	= bandpass	CP	= cadmium plate	DIA	= diameter (used in parts list)
AM	= amplitude modulation	BPF	= bandpass filter	CRT	= cathode-ray tube	DIFF	
AMPL	= amplifier	BRS	= brass	CTL	= complementary transistor logic	AMPL	= differential amplifier
APC	= automatic phase control	BWO	= backward-wave oscillator	CW	= continuous wave	div	= division
ASSY	= assembly	CAL	= calibrate	cw	= clockwise	DPDT	= double-pole, double-throw
AUX	= auxiliary	ccw	= counterclockwise	cm	= centimeter	DR	= drive
		CER	= ceramic	D/A	= digital-to-analog		
				dB	= decibel		
				dBm	= decibel referred to 1 mW		

VI

ABBREVIATIONS

DSB = double sideband
DTL = diode transistor logic
DVM = digital voltmeter
ECL = emitter coupled logic
EMF = electromotive force
EDP = electronic data processing
ELECT = electrolytic
ENCAP = encapsulated
EXT = external
F = farad
FET = field-effect transistor
F/F = flip-flop
FH = flat head
FIL H = fillister head
FM = frequency modulation
FP = front panel
FREQ = frequency
FXD = fixed
g = gram
GE = germanium
GHz = gigahertz
GL = glass
GND = ground(ed)
H = henry
h = hour
HET = heterodyne
HEX = hexagonal
HD = head
HDW = hardware
HF = high frequency
HG = mercury
HI = high
HP = Hewlett-Packard
HPF = high pass filter
HR = hour (used in parts list)
HV = high voltage
Hz = Hertz
IC = integrated circuit
ID = inside diameter
IF = intermediate frequency
IMPG = impregnated
in = inch
INCD = incandescent
INCL = include(s)
INP = input
INS = insulation
INT = internal
kg = kilogram
kHz = kilohertz
kΩ = kilohm
kV = kilovolt
lb = pound
LC = inductance-capacitance
LED = light-emitting diode
LF = low frequency
LG = long
LH = left hand
LIM = limit
LIN = linear taper (used in parts list)
lin = linear
LK WASH = lock washer
LO = low; local oscillator
LOG = logarithmic taper (used in parts list)
log = logarithm(ic)
LPF = low pass filter
LV = low voltage
m = meter (distance)
mA = milliampere
MAX = maximum
MΩ = megohm
MEG = meg (10^6) (used in parts list)
MET FLM = metal film
MET OX = metal oxide
MF = medium frequency; microfarad (used in parts list)
MFR = manufacturer
mg = milligram
MHz = megahertz
mH = millihenry
mho = mho
MIN = minimum
min = minute (time)
... ′ = minute (plane angle)
MINAT = miniature
mm = millimeter
MOD = modulator
MOM = momentary
MOS = metal-oxide semiconductor
ms = millisecond
MTG = mounting
MTR = meter (indicating device)
mV = millivolt
mVac = millivolt, ac
mVdc = millivolt, dc
mVpk = millivolt, peak
mV p-p = millivolt, peak-to-peak
mVrms = millivolt, rms
mW = milliwatt
MUX = multiplex
MY = mylar
μA = microampere
μF = microfarad
μH = microhenry
μmho = micromho
μs = microsecond
μV = microvolt
μVac = microvolt, ac
μVdc = microvolt, dc
μVpk = microvolt, peak
μVp-p = microvolt, peak-to-peak
μVrms = microvolt, rms
μW = microwatt
nA = nanoampere
NC = no connection
N/C = normally closed
NE = neon
NEG = negative
nF = nanofarad
NI PL = nickel plate
N/O = normally open
NOM = nominal
NORM = normal
NPN = negative-positive-negative
NPO = negative-positive zero (zero temperature coefficient)
NRFR = not recommended for field replacement
NSR = not separately replaceable
ns = nanosecond
nW = nanowatt
OBD = order by description
OD = outside diameter
OH = oval head
OP AMPL = operational amplifier
OPT = option
OSC = oscillator
OX = oxide
oz = ounce
Ω = ohm
P = peak (used in parts list)
PAM = pulse-amplitude modulation
PC = printed circuit
PCM = pulse-code modulation; pulse-count modulation
PDM = pulse-duration modulation
pF = picofarad
PH BRZ = phosphor bronze
PHIL = Phillips
PIN = positive-instrinsic-negative
PIV = peak inverse voltage
pk = peak
PL = phase lock
PLO = phase lock oscillator
PM = phase modulation
PNP = positive-negative-positive
P/O = part of
POLY = polystyrene
PORC = porcelain
POS = positive; position(s) (used in parts list)
POSN = position
POT = potentiometer
p-p = peak-to-peak
PP = peak-to-peak (used in parts list)
PPM = pulse-position modulation
PREAMPL = preamplifier
PRF = pulse-repetition frequency
PRR = pulse repetition rate
ps = picosecond
PT = point
PTM = pulse-time modulation
PWM = pulse-width modulation
PWV = peak working voltage
RC = resistance capacitance
RECT = rectifier
REF = reference
REG = regulated
REPL = replaceable
RF = radio frequency
RFI = radio frequency interference
RH = round head; right hand
RLC = resistance-inductance-capacitance
RMO = rack mount only
rms = root-mean-square
RND = round
ROM = read-only memory
R&P = rack and panel
RWV = reverse working voltage
S = scattering parameter
s = second (time)
... ″ = second (plane angle)
S-B = slow-blow (fuse) (used in parts list)
SCR = silicon controlled rectifier; screw
SE = selenium
SECT = sections
SEMICON = semiconductor
SHF = superhigh frequency
SI = silicon
SIL = silver
SL = slide
SNR = signal-to-noise ratio
SPDT = single-pole, double-throw
SPG = spring
SR = split ring
SPST = single-pole, single-throw
SSB = single sideband
SST = stainless steel
STL = steel
SQ = square
SWR = standing-wave ratio
SYNC = synchronize
T = timed (slow-blow fuse)
TA = tantalum
TC = temperature compensating
TD = time delay
TERM = terminal
TFT = thin-film transistor
TGL = toggle
THD = thread
THRU = through
TI = titanium
TOL = tolerance
TRIM = trimmer
TSTR = transistor
TTL = transistor-transistor logic
TV = television
TVI = television interference
TWT = traveling wave tube
U = micro (10^{-6}) (used in parts list)
UF = microfarad (used in parts list)
UHF = ultrahigh frequency
UNREG = unregulated
V = volt
VA = voltampere
Vac = volts, ac
VAR = variable
VCO = voltage-controlled oscillator
Vdc = volts, dc
VDCW = volts, dc, working (used in parts list)
V(F) = volts, filtered
VFO = variable-frequency oscillator
VHF = very-high frequency
Vpk = volts, peak
Vp-p = volts, peak-to-peak
Vrms = volts, rms
VSWR = voltage standing wave ratio
VTO = voltage-tuned oscillator
VTVM = vacuum-tube voltmeter
V(X) = volts, switched
W = watt
W/ = with
WIV = working inverse voltage
WW = wirewound
W/O = without
YIG = yttrium-iron-garnet
Zo = characteristic impedance

NOTE

All abbreviations in the parts list will be in upper case.

MULTIPLIERS

Abbreviation	Prefix	Multiple
T	tera	10^{12}
G	giga	10^{9}
M	mega	10^{6}
k	kilo	10^{3}
da	deka	10
d	deci	10^{-1}
c	centi	10^{-2}
m	milli	10^{-3}
μ	micro	10^{-6}
n	nano	10^{-9}
p	pico	10^{-12}
f	femto	10^{-15}
a	atto	10^{-18}

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e. Typical manufacturer of the part in a five-digit code; see list of manufacturers in Table 6-6.

f. Manufacturer's part number.

6-4. ORDERING INFORMATION

6-5. To obtain replacement parts, address order of inquiry to your local Hewlett-Packard Sales and Service Office (see lists at rear of this manual for addresses). Identify parts by their Hewlett-Packard part number.

6-6. To obtain a part that is not listed, include:

a. Instrument model number.

b. Instrument serial number.

c. Description of the part.

d. Function and location of the part.

6-7. HP PART NUMBER ORGANIZATION

6-8. Following is a general description of the HP part number system.

6-9. Component Parts and Materials

6-10. Generally, the prefix of HP part numbers identifies the type of device. Eight digit part numbers are used, where the four digit prefix identifies the type of component, part, or material and the four digit suffix indicates the specific type. Following is a list of some of the more commonly used prefixes for component parts. The list includes HP manufactured parts and purchased parts.

Prefix	Component/Part/Material
0121-	Capacitors, Variable (mechanical)
0122-	Capacitors, Voltage Variable (semiconductor)
0140-	Capacitors, Fixed
0150-	Capacitors, Fixed Non-Electrolytic
0160-	Capacitors, Fixed
0180-	Capacitors, Fixed Electrolytic
0330-	Insulating Materials
0340-	Insulators, Formed
0370-	Knobs, Control
0380-	Spacers and Standoffs
0410-	Crystals
0470-	Adhesives
0490-	Relays
0510-	Fasteners
0674- thru 0778-	Resistors, Fixed (non wire wound)
0811- thru 0831-	Resistors (wire wound)
1200-	Sockets for components
1205-	Heat Sinks
1250-	Connectors (RF and related parts)
1251-	Connectors (non RF and related parts)
1410-	Bearings and Bushings
1420-	Batteries
1820-	Monolithic Digital Integrated Circuits
1826-	Monolithic Linear Integrated Circuits
1850-	Transistors, Germanium PNP
1851-	Transistors, Germanium NPN
1853-	Transistors, Silicon PNP

Prefix	Component/Part/Material
1854-	Transistors, Silicon NPN
1855-	Field-Effect-Transistors
1900- thru 1912-	Diodes
1920- thru 1952-	Vacuum Tubes
1990-	Seminconductor Photosensitive and Light-Emitting Diodes
3100- thru 3106-	Switches
8120-	Cables
9100-	Transformers, Coils, Chokes, Inductors, and Filters

For example, 1854-0037, 1854-0221, and 1851-0192 are all NPN transistors. The first two are silicon and the last is germanium.

6-12. General Usage Parts

6-13. The following list gives the prefixes for HP manufactured parts used in several instruments, e.g., side frames, feet, top and bottom covers, etc. These are eight-digit part numbers with the four digit prefix identifying the type of parts as shown below:

Type of Part	Prefix
Sheet Metal	5000- to 5019-
Machined	5020- to 5039-
Molded	5040- to 5059-
Assemblies	5060- to 5079-
Components	5080- to 5099-

For example, power splitter 5088-7003 is a component and pc board support 5040-0170 is a molded part.

6-14. Specific Instrument Parts

6-15. These are HP manufactured parts for use in individual instruments or series of instruments. For these parts, the prefix indicates the instrument and the suffix indicates the type of part. For example, 05340-60001 is an assembly used in the 5340A. Following is a list of suffixes commonly used.

Type of Part	P/N Suffix
Sheet Metal	-00000 to -00499
Machined	-20000 to -20499
Molded	-40000 to -40499
Assembly	-60000 to -60499
Component	-80000 to -80299
Documentation	-90000 to -90249

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A1	05340-60017	1	BOARD ASSEMBLY, PREAMPLIFIER #1	28480	05340 60017
	05340 00009	1	PLATE, SAMPLER	28480	05340-00009
	05340-00012	3	SHIELD, SAMPLER	28480	05340-00012
	05340 00017	3	COVER, PREAMPLIFIER	28480	05340 00017
	05340-00018	2	PLATE, SAMPLER	28480	05340-00018
	05340-20033	1	HOUSING	28480	05340 20033
A1C1	0160 0204	5	CAPACITOR-FXD 5500PF200WVDC CER	01121	SMEB-A2
A1C2	0160-0204		CAPACITOR-FXD 5500PF200WVDC CER	01121	SMEB-A2
A1R1	1810 0118	1	TERMINATION:COAX SMA 50 OHM 1W	28480	1810 0118
A1A1*	5088 7004	2	THIN FILM SAMPLER ASSEMBLY *PART OF A1, NOT SEPARATELY REPLACEABLE	28480	5088 7004
A1A2*	5088-7005	2	SAMPLER DRIVE ASSEMBLY *PART OF A1, NOT SEPARATELY REPLACEABLE	28480	5088 7005
A1A3*	05340-60042	1	SAMPLER OUTPUT BOARD ASSEMBLY (LOADED ON 05340 20042 BLANK BOARD) *PART OF A1, NOT SEPARATELY REPLACEABLE	28480	05340-60042
A1A3C1	0160-3277	85	CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160 3277
A1A3C2	0160 3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A1A3L1	9100-2256	2	COIL FXD MOLDED RF CHOKE .56UH 10%	24226	10/560
A1A3R1	0757-0963	1	RESISTOR 43K 2% .125W F TC=0+ 100	24546	C4 1/8 TO 4302 G
A1A4	05340 60014	1	PREAMPLIFIER BOARD ASSEMBLY (SERIES 1220 (LOADED ON 05340-20014 BLANK BOARD)	28480	05340 60014
A1A4C1	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160 3277
A1A4C2	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C3	0160-2238	1	CAPACITOR FXD 1.5PF + .25PF 500WVDC CER	28480	0160 2238
A1A4C4	0160-3284	1	CAPACITOR-FXD 22PF +-10% 100WVDC CER	28480	0160-3284
A1A4C5	0160-3028	1	CAPACITOR FXD 10PF + 10% 100WVDC CER	28480	0160 3028
A1A4C6	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C7	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C8	0180-0197	32	CAPACITOR FXD; 2.2UF+ 10% 20VDC TA	56289	150D225X902042
A1A4C9	0160-2198	2	CAPACITOR FXD 20PF + 5% 300WVDC MICA	28480	0160 2198
A1A4C10	0140-0224	1	CAPACITOR FXD 280PF + 1% 300WVDC MICA	72136	DM15F281F0300WV1C
A1A4C11	0160-2150	2	CAPACITOR FXD 33PF + 5% 300WVDC MICA	28480	0160 2150
A1A4C12	0140-0217	1	CAPACITOR FXD 140PF + 2% 300WVDC MICA	72136	DM15F141G0300WV1CR
A1A4C13	0160-2150		CAPACITOR FXD 33PF + 5% 300WVDC MICA	28480	0160 2150
A1A4C14	0180-0197		CAPACITOR FXD; 2.2UF+ 10% 20VDC TA	56289	150D225X9020A2
A1A4C15	0160-2198		CAPACITOR FXD 20PF + 5% 300WVDC MICA	28480	0160 2198
A1A4C16	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C17	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C18	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C19	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C20	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C21	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C22	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C23	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A1A4C24	0160-2743	1	CAPACITOR FXD 33PF + 10% 200WVDC CER	28480	0160 2743
A1A4L1	9100-2247	7	COIL FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
A1A4L2	9100-2265	11	COIL FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A1A4L3	9100-0368	11	COIL FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A1A4L4	9100-0368		COIL FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A1A4L5	9100-2265		COIL FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A1A4L6	9100-0368		COIL FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A1A4L7	9100-0368		COIL FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A1A4L8	9100-0368		COIL FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A1A4L9	9100-2247		COIL FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
A1A4Q1	1854-0345	6	TRANSISTOR NPN 2N5179 SI TO 72 PD=200MW	04713	2N5179
A1A4Q2	1854-0345		TRANSISTOR NPN 2N5179 SI TO-72 PD=200MW	04713	2N5179
A1A4R1	0698-6242	2	RESISTOR 1.2K 5% .125W CC TC=.+882	01121	BB1225
A1A4R2	0698 5182	2	RESISTOR 3.9K 5% .125W CC TC=0+882	01121	BB3925
A1A4R3	0698-3374	4	RESISTOR 20 5% .125W CC TC=0+588	01121	BB2005
A1A4R4	0698-5174	11	RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A1A4R5	0698-3380	3	RESISTOR 75 OHM 5% .125W COMP	28480	0698 3380
A1A4R6	0698 6283	1	RESISTOR 10 5% .125W CC TC=0+588	01121	BB1005
A1A4R7	0698-5178	1	RESISTOR 1.5K 5% .125W CC TC=0+882	01121	BB1525
A1A4R8	0698-5181	1	RESISTOR 3.6K 5% .125W CC TC=0+882	01121	BB3625
A1A4R9	0698-3374		RESISTOR 20 5% .125W CC TC=0+588	01121	BB2005
A1A4R10	0698-8128	3	RESISTOR 220 5% .125W CC TC=0+882	01121	BB2215
A1A4R11	0698 3380		RESISTOR 75 OHM 5% .125W COMP	28480	0698 3380
A1A4R12	0698-3380		RESISTOR 75 OHM 5% .125W COMP	28480	0698 3380
A1A4R13	0698-8128		RESISTOR 220 5% .125W CC TC=0+882	01121	BB2215
A1A4R14	0698-8128		RESISTOR 220 5% .125W CC TC=0+882	01121	BB2215
A1A4R15	0698-5426	2	RESISTOR 10K 10% .125W CC TC=0+882	01121	BB1031

See introduction to this section for ordering information

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Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A1A4R16	0698 7102	2	RESISTOR 5.1K 5% .125W CC TC=0+882	01121	BB5125
A1A4R17	0698-5103	2	RESISTOR 430 5% .125W CC TC=0+832	01121	BB4315
A1A4R18	0698-8127	1	RESISTOR 22 5% .125W CC TC=0+588	01121	BB2205
A1A4R19	0698-3374		RESISTOR 20 5% .125W CC TC=0+583	01121	BB2005
A1A4R20	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A1A4R21	0698 5174		RESISTOR 200 5% .125W CC TC=0+832	01121	BB2015
A1A4R22	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A1A4R23	0698-5174		RESISTOR 200 5% .125W CC TC=0+832	01121	BB2015
A1A4R24	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A1A4R25	0698-5426		RESISTOR 10K 10% .125W CC TC=0+882	01121	BB1031
A1A4R26	0698 7102		RESISTOR 5.1K 5% .125W CC TC=0+582	01121	BB5125
A1A4R27	0698-3374		RESISTOR 20 5% .125W CC TC=0+583	01121	BB2005
A1A4R28	0698-5103		RESISTOR 430 5% .125W CC TC=0+882	01121	BB4315
A1A4R29	0674-2405	1	RESISTOR 24 5% .125W CC TC=0+588	01121	BB2405
A1A4R30	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A1A4R31	0698 3378	4	RESISTOR 51 5% .125W CC TC=0+583	01121	BB5105
A1A4U1	1858 0004	5	IC CA3049 AMPL	02735	CA3049
A1A5	05340-60077	1	FILTER ASSEMBLY #1	28480	05340-60077
	05340-20074	2	HOUSING, FILTER	28480	05340-20074
	05340 00030	1	COVER, HOUSING	28480	05340-00030
A1A5A1	05340-60075	1	BOARD, FILTER #1 SERIES 1344A (LOADED ON 05340-20075 BLANK BOARD)	28480	05340-60075
A1A5A1C1	0180-1745	6	CAPACITOR-FXD; 1.5UF+-10% 20VDC TA	56289	150D155X9020A2
A1A5A1C2	0180 1745		CAPACITOR-FXD; 1.5UF+-10% 20VDC TA	56289	150D155X9020A2
A1A5A1C3	0160 3879	15	CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A1A5A1C4	0160-3879		CAPACITOR FXD .01UF + 20% 100WVDC CER	29480	0160 3879
A1A5A1L1	9100-1620	4	COIL FXD MOLDED RF CHOKE 15UH 10%	24226	15/152
A1A5A1L2	9100-1620		COIL FXD MOLDED RF CHOKE 15UH 10%	24226	15/152
A1A5A1L3	9100-2272	5	COIL FXD MOLDED RF CHOKE 47UH 10%	24226	10/472
A1A5A1L4	9100-2272		COIL FXD MOLDED RF CHOKE 47UH 10%	24226	10/472
A2	05340-60027	1	PREAMPLIFIER ASSEMBLY, #2	28480	05340 60027
	05340 00012		SHIELD, AMPLIFIER	28480	05340-00012
	05340-00017		COVER, PREAMPLIFIER	28480	05340-00017
	05340 00018		PLATE, SAMPLER	28480	05340 00018
	05340-20035	1	HOUSING, PREAMPLIFIER #2	28480	05340-20035
A2C1	0160 0204		CAPACITOR-FXD 5500PF200WVDC CER	01121	SMFB-A2
A2C2	0160-0204		CAPACITOR-FXD 5500PF200WVDC CER	01121	SMFB-A2
A2C3	0160 0204		CAPACITOR-FXD 5500PF200WVDC CER	01121	SMFB A2
A2FL1	5088-7006	1	FILTER:450 MHZ	28480	5088-7006
A2A1*	5088 7004		THIN FILM SAMPLER ASSEMBLY *PART OF A2, NOT SEPARATELY REPLACEABLE	28480	5088 7004
A2A2*	5088-7005		SAMPLER DRIVE ASSEMBLY *PART OF A2, NOT SEPARATELY REPLACEABLE	28480	5088 7005
A2A3*	05340-60043	1	SAMPLER OUTPUT BOARD ASSEMBLY (LOADED ON 05340-20043 BLANK BOARD) *PART OF A2, NOT SEPARATELY REPLACEABLE	28480	05340-60043
A2A3C1	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160 3277
A2A3C2	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A2A3R1	0683-4745	10	RESISTOR 470K 5% .25W FC TC= 800/+900 (THIS CHANGE WAS MADE ON INSTRUMENTS WITH SERIAL NO. 1440A02474 & UP).	01121	CR4745
A2A4	05340-60040	1	PREAMPLIFIER BOARD ASSEMBLY (SERIES 1532A) (LOADED ON 05340-20040 BLANK BOARD)	28480	05340-60040
A2A4C1	0121-0060	1	CAPACITOR-V TRMR-CER 2/8PF 350V PC-MTG	00865	304322 2/8PF NPO
A2A4C2	0180-1743	6	CAPACITOR-FXD; .1UF+-10% 35VDC TA-SOLID	56289	150D104X9035A2
A2A4C3	0140 0201	1	CAPACITOR-FXD 12PF +-5% 500WVDC MICA	72136	DM15C120J0500WV1CR
A2A4C4	0180-0197		CAPACITOR FXD; 2.2UF+ 10% 20VDC TA	56289	150D225X9020A2
A2A4C5	0160-2327	2	CAPACITOR FXD 1000PF + 20% 100WVDC CER	28480	0160 2327
A2A4C6	0160-2262	2	CAPACITOR FXD 16PF + 5% 500WVDC CER	28480	0160 2262
A2A4C7	0160 2262		CAPACITOR FXD 16PF + 5% 500WVDC CER	28480	0160 2262
A2A4C8	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C9	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C10	0180-0197		CAPACITOR FXD; 2.2UF+ 10% 20VDC TA	56289	150D225X9020A2
A2A4C11	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C12	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C13	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C14	0160-2241	1	CAPACITOR FXD 2.2PF + .25PF 500WVDC CER	28480	0160 2241
A2A4C15	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A2A4C16	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A2A4C17	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C18	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C19	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160 3277
A2A4C20	0140-0195	2	CAPACITOR FXD 130PF 300WVDC MICA	28480	0140-0195
A2A4C21	0160-2198	1	CAPACITOR FXD 20PF +5% 300WVDC MICA	28480	0160-2198
A2A4C22	0140-0193		CAPACITOR FXD 82PF +5% 300WVDC MICA	72136	DM15E820J0300WV1CR
A2A4L1*	9140-0143	1	COIL FXD MOLDED RF CHOKE 3.3UH 10%	24226	10/331
A2A4L2	9100-2265		COIL FXD MOLDED RF CHOKE 100UH 10%	24226	10/102
A2A4L3	9140-0142	1	COIL FXD MOLDED RF CHOKE 2.2UH 10%	24226	10/221
A2A4L4	9100-2265		COIL FXD MOLDED RF CHOKE 100UH 10%	24226	10/102
A2A4L5	9100-2257	2	COIL FXD MOLDED RF CHOKE .82UH 10%	24226	10/820
A2A4L6	9100-2256		COIL FXD MOLDED RF CHOKE .56UH 10%	24226	10/560
A2A4L7	9100-2265		COIL FXD MOLDED RF CHOKE 100UH 10%	24226	10/102
A2A4L8	9100-2256		COIL FXD MOLDED RF CHOKE .56UH 10%	13019	09-4426-3K
A2A4L9	9140-0158	23	COIL FXD MOLDED RF CHOKE 3.3UH 10%	28480	9140-0158
A2A4L10	9100-2256		COIL FXD MOLDED RF CHOKE .56UH 10%	13019	09-4426-3K
A2A4Q1	1855-0081	1	TRANSISTOR J FET 2N5245 N CHAN D MODE SI	01295	2N5245
A2A4Q2	1853-0015	1	TRANSISTOR PNP SI PD=200MW FT=500MHZ	28480	1853-0015
A2A4R1	0757-0384	13	RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8 T0 20R0 F
A2A4R2	0757-0920	3	RESISTOR 680 2% .125W F TC=0+-100	24546	C4-1/8-T0-681-G
A2A4R3	0757-0921	1	RESISTOR 750 2% .125W F TC=0+ 100	24546	C4 1/8 TO 751 G
A2A4R4	0757-0382	1	RESISTOR 16.2 1% .125W F TC=0+ 100	19701	MF4C1/8 T0 16R2 F
A2A4R5	0757-0917	4	RESISTOR 510 2% .125W F TC=0+ 100	24546	C4 1/8 TO 511 G
A2A4R6	0757 0917		RESISTOR 510 2% .125W F TC=0+ 100	24546	C4 1/8 TO 511 G
A2A4R7	0757-0917		RESISTOR 510 2% .125W F TC=0+ 100	24546	C4 1/8 TO 511 G
A2A4R8	0757-0948	20	RESISTOR 10K 2% .125W F TC=0+ 100	24546	C4 1/8 TO 1002 G
A2A4R9	0757-0384		RESISTOR 20 1% .125W F TC=0+ 100	19701	MF4C1/8 T0 20R0 F
A2A4R10	0757-0941	14	RESISTOR 5.1K 2% .125W F TC=0+ 100	24546	C4 1/8 TO 5101 G
A2A4R11	0757 0915	8	RESISTOR 430 2% .125W F TC=0+ 100	24546	C4 1/8 TO 431 G
A2A4R12	0757-0384		RESISTOR 20 1% .125W F TC=0+ 100	19701	MF4C1/8 T0 20R0 F
A2A4R13	0757-0915		RESISTOR 430 2% .125W F TC=0+ 100	24546	C4 1/8 TO 431 G
A2A4R14	0757-0908	4	RESISTOR 220 2% .125W F TC=0+ 100	24546	C4 1/8 TO 221 G
A2A4R15	0757-0904	1	RESISTOR 150 2% .125W F TC=0+ 100	24546	C4 1/8 TO 151 G
A2A4R16	0757 0908		RESISTOR 220 2% .125W F TC=0+ 100	24546	C4 1/8 TO 221 G
A2A4R17	0757-0948		RESISTOR 10K 2% .125W F TC=0+ 100	24546	C4 1/8 TO 1002 G
A2A4R18	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+ 100	24546	C4 1/8 TO 5101 G
A2A4R19	0757-0915		RESISTOR 430 2% .125W F TC=0+ 100	24546	C4 1/8 TO 431 G
A2A4R20	0757-0384		RESISTOR 20 1% .125W F TC=0+ 100	19701	MF4C1/8 T0 20R0 F
A2A4R21	0757 0907	20	RESISTOR 200 2% .125W F TC=0+ 100	24546	C4 1/8 TO 201 G
A2A4R22	0757-0384		RESISTOR 20 1% .125W F TC=0+ 100	19701	MF4C1/8 T0 20R0 F
A2A4U1	1858 0004		IC CA3049 AMPL	02735	CA3049
A2A5	05340-60078	1	FILTER ASSEMBLY, #2	28480	05340-60078
	05340 20074		HOUSING, FILTER	28480	05340-20074
	05340-00031	1	COVER, HOUSING	28480	05340-00031
A2A5A1	05340 60076	1	BOARD, FILTER ASSEMBLY, #2 (SERIES 1344A) (LOADED ON 05340-20076 BLANK BOARD)	28480	05340 60076
A2A5A1C1	0180-1745		CAPACITOR FXD; 1.5UF+ 10% 20VDC TA	56289	150D155X9020A2
A2A5A1C2	0180-1745		CAPACITOR FXD; 1.5UF+ 10% 20VDC TA	56289	150D155X9020A2
A2A5A1C3	0160-3879		CAPACITOR FXD .01UF + 20% 100WVDC CER	28480	0160 3879
A2A5A1C4	0160-3879		CAPACITOR FXD .01UF + 20% 100WVDC CER	28480	0160 3879
A2A5A1L1	9100-1620		COIL FXD MOLDED RF CHOKE 15UH 10%	24226	15/152
A2A5A1L2	9100-1620		COIL FXD MOLDED RF CHOKE 15UH 10%	24226	15/152
A2A5A1L3	9100-2272		COIL FXD MOLDED RF CHOKE 47UH 10%	24226	10/472
A2A5A1L4	9100-2272		COIL FXD MOLDED RF CHOKE 47UH 10%	24226	10/472
A3	05340-60001	1	HI-Z INPUT AMPLIFIER ASSEMBLY (SERIES 1348A) (LOADED ON 05340-20001 BLANK BOARD)	28480	05340 60001
A3C1	0180 0106	21	CAPACITOR FXD; 60UF+-20% 6VDC TA SOLID	56289	150D606X0006B2
A3C2	0180-0374	20	CAPACITOR FXD; 10UF+ 10% 20VDC TA SOLID	56289	150D106X9020B2
A3C3	0180-0106		CAPACITOR FXD; 60UF+ 20% 6VDC TA SOLID	56289	150D606X0006B2
A3C4	0170-0022	2	CAPACITOR FXD .1UF + 20% 600WVDC POLYE	28480	0170-0022
A3C5	0180-0374		CAPACITOR FXD; 10UF+-10% 20VDC TA SOLID	56289	150D106X902082
A3C6	0160-0179	1	CAPACITOR FXD 33PF +-5% 300WVDC MICA	28480	0160-0179
A3C7	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160-3277
A3C8	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160-3277
A3C9	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160-3277
A3C10	0140-0196	1	CAPACITOR FXD 150PF + 5% 300WVDC MICA	72136	DM15F151J0300WV1CR
A3C11	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160-3277
A3C12	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160-3277
A3C13	0160-3277		CAPACITOR FXD .01UF + 20% 50WVDC CER	28480	0160-3277
A3C14	0160-2327		CAPACITOR FXD 1000PF + 20% 100WVDC CER	28480	0160-2327
A3C15	0180-0197		CAPACITOR FXD; 2.2UF+ 10% 20VDC TA	56289	150D225X9020A2

*FACTORY SELECTED VALUE

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A3C16	0180-0197		CAPACITOR-FXD: 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A3C17	0180-0116	3	CAPACITOR-FXD: 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A3C18	0180-0116		CAPACITOR-FXD: 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A3CR1	1901-0040	36	DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A3CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A3CR3	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A3CR4	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A3CR5	1901-0376	2	DIODE-GEN PRP 35V 50NA DO-7	28480	1901-0376
A3CR6	1901-0376		DIODE-GEN PRP 35V 50NA DO-7	28480	1901-0376
A3CR7	1902-0025	10	DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A3CR8	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939 182
A3CR9	1901-0535	7	DIODE-SCHOTTKY	28480	1901-0535
A3CR10	1901-0535		DIODE-SCHOTTKY	28480	1901-0535
A3E1	9170-0029	4	CORE-SHIELDING BEAD	02114	56-590-65A2/4A
A3E2	9170-0029		CORE-SHIELDING BEAD	02114	56-590-65A2/4A
A3L1	9140-0114	4	COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	15/102
A3L2	9140-0114		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	15/102
A3L3	9140-0114		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	15/102
A3L4	9140-0114		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	15/102
A3Q1	1855-0334	2	TSTR:SI FET DUAL N-CHANNEL	17856	DN377
A3Q2	1853-0036	6	TRANSISTOR PNP SIL PD=310MW FT=250MHZ	04713	SPS-3612
A3Q3	1854-0215	10	TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A3R1	0683-1035	3	RESISTOR 10K 5% .25W FC TC=-400/+700	01121	CB1035
A3R2	0757-0908		RESISTOR 220 2% .125W F TC=0+-100	24546	C4-1/8-T0-221-G
A3R3	0683-1055	3	RESISTOR 1M 5% .25W FC TC=-800/+900	01121	CB1055
A3R4	0757-0920		RESISTOR 680 2% .125W F TC=0+-100	24546	C4-1/8-T0-681-G
A3R5	0757-0920		RESISTOR 680 2% .125W F TC=0+-100	24546	C4-1/8-T0-681-G
A3R6	0683-1015	7	RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
A3R7	0757-0908		RESISTOR 220 2% .125W F TC=0+-100	24546	C4-1/8-T0-221-G
A3R8	0698-3446	3	RESISTOR 383 1% .125W F TC=0+-100	16299	C4-1/8-T0-383R-F
A3R9	0757-0913	1	RESISTOR 360 2% .125W F TC=0+-100	24546	C4-1/8-T0-361-G
A3R10	2100-2520	1	RESISTOR-TRMR 50 20% C SIDE-ADJ 1 TURN	30983	ET50X500
A3R11	0757-0932	3	RESISTOR 2.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2201-G
A3R12	0683-1025	8	RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A3R13	0683-5105	9	RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A3R14	0757-0917		RESISTOR 510 2% .125W F TC=0+-100	24546	C4-1/8-T0-511-G
A3R15	0757-0925	1	RESISTOR 1.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1101-G
A3R16	0683-6815	2	RESISTOR 680 5% .25W FC TC=-400/+600	01121	CB6815
A3R17	0683-3945	2	RESISTOR 390K 5% .25W FC TC=-800/+900	01121	CB3945
A3R18	0683-3945		RESISTOR 390K 5% .25W FC TC= 800/+900	01121	CB3945
A3R19	0683-1135	2	RESISTOR 11K 5% .25W FC TC=-400/+800	01121	CB1135
A3R20	0683-3345	3	RESISTOR 330K 5% .25W FC TC=-800/+900	01121	CB3345
A3R21	0683-3345		RESISTOR 330K 5% .25W FC TC=-800/+900	01121	CB3345
A3R22			NOT ASSIGNED		
A3R23	0683-1135		RESISTOR 11K 5% .25W FC TC=-400/+800	01121	CB1135
A3R24	0757-0944	2	RESISTOR 6.8K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6801-G
A3U1	1820-0754	2	IC AMPL	28480	1820-0754
A3XU1	1200-0475	7	CONNECTOR:1-CONT SKT .016 DIA	22526	75060-005
A4	05340-60002	1	PHASE/QUAD DETECTOR ASSEMBLY (SERIES 1532A) (LOADED ON 05340-20002 BLANK BOARD)	28480	05340-60002
A4C1	0150-0093	6	CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0150-0093
A4C2	0150-0093		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0150-0093
A4C3	0150-0093		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0150-0093
A4C4	0150-0093		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0150-0093
A4C5	0160-2255	1	CAPACITOR-FXD 8.2PF +-.25PF 500WVDC CER	28480	0160-2255
A4C6	0150-0093		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0150-0093
A4C7	0140-0191	3	CAPACITOR-FXD 56PF +-5% 300WVDC MICA	72136	DM15E560J0300WV1CR
A4C8	0160-2307	4	CAPACITOR-FXD 47PF +-5% 300WVDC MICA	28480	0160-2307
A4C9	0150-0093		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0150-0093
A4C10	0160-2307		CAPACITOR-FXD 47PF +-5% 300WVDC MICA	28480	0160-2307
A4C11	0160-2199	1	CAPACITOR-FXD 30PF +-5% 300WVDC MICA	28480	0160-2199
A4C12	0140-0176	4	CAPACITOR-FXD 100PF +-2% 300WVDC MICA	72136	DM15F101G0300WV1CR
A4C13	0140-0145	1	CAPACITOR-FXD 22PF +-5% 500WVDC MICA	72136	DM15C220J0500WV1CR
A4C14	0160-2307		CAPACITOR-FXD 47PF +-5% 300WVDC MICA	28480	0160-2307
A4C15	0160-0155	2	CAPACITOR-FXD 3300PF +-10% 200WVDC POLYE	56289	292P33292
A4C16	0160-2307		CAPACITOR-FXD 47PF +-5% 300WVDC MICA	28480	0160-2307
A4CR1	1901-0179	8	DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR2	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR3	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR4	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR5	1901-0022	2	DIODE-STABISTOR 10V 250NA	28480	1901-0022

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A4CR6	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR7	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR8	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO 7	28480	1901-0179
A4CR9	1901-0179		DIODE-SWITCHING 15V 50NA 750PS DO-7	28480	1901-0179
A4CR10	1901-0022		DIODE-STABISTOR 10V 250NA	28480	1901-0022
A4L1	9140-0105	1	COIL-FXD MOLDED RF CHOKE 8.2UH 10%	24226	15/821
A4L2	9100-2257		COIL-FXD MOLDED RF CHOKE .82UH 10%	24226	10/820
A4L3	9140-0098	1	COIL-FXD MOLDED RF CHOKE 2.2UH 10%	24226	15/221
A4L4	9100-2260	1	COIL-FXD MOLDED RF CHOKE 1.8UH 10%	76493	9230-26
A4Q1	1854-0071	27	TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A4Q2	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A4Q3	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A4Q4	1854-0073	8	TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A4Q5	1854-0073		TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A4Q6	1854-0073		TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A4R1	0698-3440	4	RESISTOR 196 1% .125W F TC=0+-100	16299	C4-1/8-T0-196R-F
A4R2	0698-3440		RESISTOR 196 1% .125W F TC=0+-100	16299	C4-1/8-T0-196R-F
A4R3	0698-3155	2	RESISTOR 4.64K 1% .125W F TC=0+-100	16299	C4-1/8-T0-4641-F
A4R4	0757-0438	4	RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5111-F
A4R5	0757-0438		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5111-F
A4R6	0757-0401	7	RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R7	0757-0401		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R8	0698-0083	2	RESISTOR 1.96K 1% .125W F TC=0+-100	16299	C4-1/8-T0-1961-F
A4R9	0698-3443	2	RESISTOR 287 1% .125W F TC=0+-100	16299	C4-1/8-T0-287R-F
A4R10	0757-0924	18	RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A4R11	0698-0083		RESISTOR 1.96K 1% .125W F TC=0+-100	16299	C4-1/8-T0-1961-F
A4R12	0698-3443		RESISTOR 287 1% .125W F TC=0+-100	16299	C4-1/8-T0-287R-F
A4R13	0757-0401		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R14	0757-0421	2	RESISTOR 825 1% .125W F TC=0+-100	24546	C4-1/8-T0-825R-F
A4R15	0698-3154	4	RESISTOR 4.22K 1% .125W F TC=0+-100	16299	C4-1/8-T0-4221-F
A4R16	0698-3154		RESISTOR 4.22K 1% .125W F TC=0+-100	16299	C4-1/8-T0-4221-F
A4R17	0757-0416	5	RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A4R18	0757-0199	3	RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A4R19	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A4R20	0757-0199		RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A4R21	0757-0401		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R22*	0757-0930		RESISTOR 1.8K 2% .125W F TC=0+-100	28480	0757-0930
A4R23	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A4R24	0757-0401		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R25	0698-3439	3	RESISTOR 178 1% .125W F TC=0+-100	16299	C4-1/8-T0-178R-F
A4R26	0698-3154		RESISTOR 4.22K 1% .125W F TC=0+-100	16299	C4-1/8-T0-4221-F
A4R27	0698-3154		RESISTOR 4.22K 1% .125W F TC=0+-100	16299	C4-1/8-T0-4221-F
A4R28	0757-0416		RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A4R29	0757-0438		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5111-F
A4R30	0698-3437	1	RESISTOR 133 1% .125W F TC=0+-100	16299	C4-1/8-T0-133R-F
A4R31	0698-3157	1	RESISTOR 19.6K 1% .125W F TC=0+-100	16299	C4-1/8-T0-1962-F
A5	05340-60003	1	SEARCH ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20003 BLANK BOARD)	28480	05340-60003
A5C1	0180-0228	7	CAPACITOR-FXD; 22UF+-10% 15VDC TA-SOLID	56289	150D226X9015B2
A5C2	0180-0228		CAPACITOR-FXD; 22UF+-10% 15VDC TA-SOLID	56289	150D226X9015B2
A5C3	0180-0228		CAPACITOR-FXD; 22UF+-10% 15VDC TA-SOLID	56289	150D226X9015B2
A5C4	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A5C5	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A5C6	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A5C7	0180-0376	1	CAPACITOR-FXD; .47UF+-10% 35VDC TA	56289	150D474X9035A2
A5C8	0160-3060	14	CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A5CR1	1902-0041	2	DIODE-ZNR 5.11V 5% DO-7 PD=.4W TC=-.009%	04713	SZ 10939-98
A5CR2	1902-0041		DIODE-ZNR 5.11V 5% DO-7 PD=.4W TC=-.009%	04713	SZ 10939-98
A5CR3	1901-0025	8	DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A5CR4	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A5CR5	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A5L1	9140-0137	7	COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A5L2	9140-0137		COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A5L3	9140-0137		COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A5Q1	1855-0052	1	TRANSISTOR MOSFET P-CHAN D-MODE TO-92 SI	07263	2N4360
A5Q2	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A5Q3	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A5R1	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A5R2	0757-0902	2	RESISTOR 120 2% .125W F TC=0+-100	24546	C4-1/8-T0-121-G
A5R3	0757-0902		RESISTOR 120 2% .125W F TC=0+-100	24546	C4-1/8-T0-121-G
A5R4	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A5R5	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G

*FACTORY SELECTED VALUE

See introduction to this section for ordering information

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Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A5R6	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A5R7	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A5R8	0757-0927	3	RESISTOR 1.3K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1301-G
A5R9	0757-0931	24	RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A5R10	0757-0931		RESISTOR 2K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-2001-G
A5R11	0757-0940	3	RESISTOR 4.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-4701-G
A5R12	0757-0465	4	RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A5R13	0757-0966	1	RESISTOR 56K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5602-G
A5R14	0757-0465		RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A5R15	2100-2514	1	RESISTOR-TRMR 20K 10% C SIDE ADJ 1-TURN	30983	ET50W203
A5R16	0757-0950	2	RESISTOR 12K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1202-G
A5R17	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A5R18	0757-0465		RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A5R19	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A5R20	0757-0465		RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A5U1	1826-0073	9	IC:LINEAR	28480	1826-0073
A5U2	1826-0073		IC:LINEAR	28480	1826-0073
A5U3	1826-0073		IC:LINEAR	28480	1826-0073
A5U4	1826-0073		IC:LINEAR	28480	1826-0073
A5U5	1820-0537	2	IC SN74 13 N SCHMITT	01295	SN7413N
A6	05340-60004	1	SEARCH PROGRAMMER ASSEMBLY (SERIES 1344A) (LOADED ON 05340-20004 BLANK BOARD)	28480	05340-60004
A6C1	0180-0291	2	CAPACITOR-FXD; 1UF+-10% 35VDC TA-SOLID	56289	150D105X9035A2
A6C2	0180-1743		CAPACITOR-FXD; .1UF+-10% 35VDC TA-SOLID	56289	150D104X9035A2
A6C3	0180-1743		CAPACITOR-FXD; .1UF+-10% 35VDC TA-SOLID	56289	150D104X9035A2
A6C4	0180-1743		CAPACITOR-FXD; .1UF+-10% 35VDC TA-SOLID	56289	150D104X9035A2
A6C5	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A6C6	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A6C7	0180 0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A6C8	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A6C9	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A6C10	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A6CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR3	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR4	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR5	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR6	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR7	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR8	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR9	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR10	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR11	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR12	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A6CR13	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A6CR14	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A6CR15	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A6CR16	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A6CR17	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A6CR18	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A6CR19	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO 35	28480	1901-0040
A6L1	9140-0210	3	COIL-FXD MOLDED RF CHOKE 100UH 5%	24226	15/103
A6Q1	1855-0020	12	TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q2	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q3	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q4	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q5	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q6	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q7	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q8	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q9	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q10	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q11	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6Q12	1855-0020		TRANSISTOR J-FET N-CHAN D-MODE TO-18 SI	28480	1855-0020
A6R1	0698-3444	2	RESISTOR 316 1% .125W F TC=0+-100	16299	C4-1/8-T0-316R-F
A6R2	0698-3444		RESISTOR 316 1% .125W F TC=0+-100	16299	C4-1/8-T0-316R-F
A6R3	0757-0955	3	RESISTOR 20K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2002-G
A6R4	0698-7185	12	RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R5	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A6R6	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R7	0757-0916	5	RESISTOR 470 2% .125W F TC=0+-100	24546	C4-1/8-T0-471-G
A6R8	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R9	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A6R10	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A6R11	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-TO-2001-G
A6R12	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R13	0757-0935	1	RESISTOR 3K 2% .125W F TC=0+-100 FACTORY SELECTED PART	24546	C4-1/8-TO-3001-G
A6R14	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R15	0757-0942	1	RESISTOR 5.6K 2% .125W F TC=0+-100 FACTORY SELECTED PART	24546	C4-1/8-TO-5601-G
A6R16	0698-3376	6	RESISTOR 43 5% .125W CC TC=0+588	01121	BB4305
A6R17	0698-3376		RESISTOR 43 5% .125W CC TC=0+588	01121	BB4305
A6R18	0698-3376		RESISTOR 43 5% .125W CC TC=0+588	01121	BB4305
A6R19	0698-3376		RESISTOR 43 5% .125W CC TC=0+588	01121	BB4305
A6R20	0698-3376		RESISTOR 43 5% .125W CC TC=0+588	01121	BB4305
A6R21	0698-3376		RESISTOR 43 5% .125W CC TC=0+588	01121	BB4305
A6R22	0698-8072	1	RESISTOR 39K 5% .125W CC TC=0+-850	01121	BB3935
A6R23	0698-5182		RESISTOR 3.9K 5% .125W CC TC=0+882	01121	BB3925
A6R24	0698-6242		RESISTOR 1.2K 5% .125W CC TC=0+882	01121	BB1225
A6R25	0698-5996	1	RESISTOR 560 5% .125W CC TC=0+882	01121	BB5615
A6R26	0698-5175	1	RESISTOR 360 5% .125W CC TC=0+882	01121	BB3615
A6R27	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A6R28	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R29	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R30	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R31	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R32	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R33	0698-7185		RESISTOR 220K 5% .125W CC TC=0+1176	01121	BB2245
A6R34	0698-6294	6	RESISTOR 47K 5% .125W CC TC=0+882	01121	BB4735
A6R35	0698-6294		RESISTOR 47K 5% .125W CC TC=0+882	01121	BB4735
A6R36	0698-6294		RESISTOR 47K 5% .125W CC TC=0+882	01121	BB4735
A6R37	0698-6294		RESISTOR 47K 5% .125W CC TC=0+882	01121	BB4735
A6R38	0698-6294		RESISTOR 47K 5% .125W CC TC=0+882	01121	BB4735
A6R39	0698-6294		RESISTOR 47K 5% .125W CC TC=0+882	01121	BB4735
A6R40	0698-5999	6	RESISTOR 4.7K 5% .125W CC TC=0+882	01121	BB4725
A6R41	0698-5999		RESISTOR 4.7K 5% .125W CC TC=0+882	01121	BB4725
A6R42	0698-5999		RESISTOR 4.7K 5% .125W CC TC=0+882	01121	BB4725
A6R43	0698-5999		RESISTOR 4.7K 5% .125W CC TC=0+882	01121	BB4725
A6R44	0698-5999		RESISTOR 4.7K 5% .125W CC TC=0+882	01121	BB4725
A6R45	0698-5999		RESISTOR 4.7K 5% .125W CC TC=0+882	01121	BB4725
A6U1	1820-0577	1	IC, SN7416N, INVERTER	01295	SN7416N
A6U2	1820-0214	2	IC:TTL BCD-TO-DECIMAL DECODER	01295	SN7442N
A6U3	1820-0054	16	IC:SN7400N	01295	SN7400N
A6U4	1820-0765	1	IC SN74 197 N COUNTER	01295	SN74197N
A6U5	1820-0207	1	IC MV	07263	9601PC
A7	05340-60005	1	DC AMPLIFIER/COMPENSATOR NO. 1 ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20005 BLANK BOARD)	28480	05340-60005
A7C1	0160-0205	1	CAPACITOR-FXD 10PF +-5% 500WVDC MICA	28480	0160-0205
A7C2	0180-0106		CAPACITOR-FXD: 60UF+-20% 6VDC TA-SOLID	56289	150D606X0006B2
A7C3	0180-0160	2	CAPACITOR-FXD: 22UF+-20% 35VDC TA-SOLID	56289	150D226X0035R2
A7C4	0180-0160		CAPACITOR-FXD: 22UF+-20% 35VDC TA-SOLID	56289	150D226X0035R2
A7C5	0160-2230	1	CAPACITOR-FXD 3300PF +-5% 300WVDC MICA	28480	0160-2230
A7C6	0140-0177	1	CAPACITOR-FXD 400PF +-1% 300WVDC MICA	72136	DM15F401F0300WV1CR
A7C7	0160-2055	16	CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A7C8	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A7C9	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A7C10	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A7C11	0180-0117	1	CAPACITOR-FXD: 2.7UF+-10% 35VDC TA	56289	150D275X9035B2
A7C12	0180-0374		CAPACITOR-FXD: 10UF+-10% 20VDC TA-SOLID	56289	150D106X9020B2
A7C13	0160-0138	1	CAPACITOR-FXD .047UF +-10% 200WVDC POLYE	28480	0160-0138
A7C14	0180-1743		CAPACITOR-FXD: .1UF+-10% 35VDC TA-SOLID	56289	150D104X9035A2
A7CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A7CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A7CR3	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A7CR4	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A7CR5	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A7CR6	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A7CR7	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A7CR8	1901-0025		DIODE-GEN PRP 100V 200NA DO-7	28480	1901-0025
A7L1	9140-0096	6	COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
A7L2	9140-0096		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
A7L3	9140-0096		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
A7L4	9100-2249	1	COIL-FXD MOLDED RF CHOKE .15UH 10%	24226	10/150
A7Q1	1853-0020	9	TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A7Q2	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A7Q3	1853-0036		TRANSISTOR PNP SIL PD=310MW FT=2507HZ	04713	SPS-3612
A7Q4	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A7Q5	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A7Q6	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A7Q7	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A7Q8	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A7Q9	1853-0036		TRANSISTOR PNP SIL PD=310MW FT=250?HZ	04713	SPS-3612
A7R1	0698-3451	1	RESISTOR 133K 1% .125W F TC=0+-100	16299	C4-1/8-T0-1333-F
A7R2	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A7R3	0757-0416		RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A7R4	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R5	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A7R6	0698-3260	1	RESISTOR 464K 1% .125W F TC=0+-100	03888	PME55S
A7R7	0757-0932		RESISTOR 2.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2201-G
A7R8	0683-2005	1	RESISTOR 20 5% .25W FC TC=-400/+500	01121	CB2005
A7R9	0757-0316	2	RESISTOR 42.2 1% .125W F TC=0+-100	24546	C4-1/8-T0-42R2-F
A7R10	0757-0421		RESISTOR 825 1% .125W F TC=0+-100	24546	C4-1/8-T0-825R-F
A7R11	0757-0952	4	RESISTOR 15K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1502-G
A7R12	0757-0952		RESISTOR 15K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1502-G
A7R13	2100-2574	5	RESISTOR-TRMR 500 10% C SIDE-ADJ 1-TURN	30983	ET50X501
A7R14	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R15	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R16	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R17	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R18	0757-0949	1	RESISTOR 11K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1102-G
A7R19	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A7R20	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R21	0683-0685	3	RESISTOR 6.8 5% .25W FC TC=-400/+500	01121	CB68G5
A7R22	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A7R23	0757-0952		RESISTOR 15K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1502-G
A7R24	0757-0316		RESISTOR 42.2 1% .125W F TC=0+-100	24546	C4-1/8-T0-42R2-F
A7R25	2100-2517	2	RESISTOR-TRMR 50K 10% C SIDE-ADJ 1-TURN	30983	ET50X503
A7R26	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R27	2100-2632	2	RESISTOR-TRMR 100 10% C SIDE-ADJ 1-TURN	30983	ET50X101
A7R28	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A7R29	0757-0923	1	RESISTOR 910 2% .125W F TC=0+-100	24546	C4-1/8-T0-911-G
A7R30	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A7R31	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A7R32	0757-0378	1	RESISTOR 11 1% .125W F TC=0+-100	19701	MF4C1/8-T0-11R0-F
A7R33	0683-0685		RESISTOR 6.8 5% .25W FC TC=-400/+500	01121	CB68G5
A7R34	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A7R35	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A7TP1	0360-0124	19	TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7TP2	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7TP3	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7TP4	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7TP5	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7TP6	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7TP7	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A7U1	1826-0021	2	IC VOLTAGE FOLLOWER	27014	LM310H
A8	05340-60006	1	BANDPASS FILTER/PHASE DETECTOR ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20006 BLANK BOARD)	28480	05340-60006
A8C1	0160-2227	1	CAPACITOR-FXD 2400PF +-5% 300WVDC MICA	28480	0160-2227
A8C2	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A8C3	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A8C4	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A8C5	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A8C6	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C7	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C8	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C9	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C10	0160-0161	3	CAPACITOR-FXD .01UF +-10% 200WVDC POLYE	56289	292P10392
A8C11	0140-0221	1	CAPACITOR-FXD 220PF +-1% 300WVDC MICA	72136	DM15F221F0300WV1C
A8C12	0160-0161		CAPACITOR-FXD .01UF +-10% 200WVDC POLYE	56289	292P10392
A8C13	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C14	0160-0161		CAPACITOR-FXD .01UF +-10% 200WVDC POLYE	56289	292P10392
A8C15	0160-2220	1	CAPACITOR-FXD 1200PF +-5% 300WVDC MICA	28480	0160-2220
A8C16	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C17	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C18	0140-0234	1	CAPACITOR-FXD 500PF +-1% 300WVDC MICA	72136	DM15F501F0300WV1C
A8C19	0160-0174	1	CAPACITOR-FXD .47UF +80-20% 25WVDC CER	56289	5C11B7-CML
A8C20	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C21	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A8C22	0180-0228		CAPACITOR-FXD; 22UF+-10% 15VDC TA-SOLID	56289	150D226X9015B2
A8C23	0180-0210	3	CAPACITOR-FXD; 3.3UF+-20% 15VDC TA	56289	150D335X0015A2

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A8CR1	1902-3182	2	DIODE-ZNR 12.1V 5% DO-7 PD=.4W TC=+.064%	04713	SZ 10939-206
A8CR2	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A8CR3	1902-0025		DIODE-ZNR 10V 5% DO-7 PD=.4W TC=+.06%	04713	SZ 10939-182
A8L1	9140-0118	4	COIL-FXD MOLDED RF CHOKE 500UH 5%	24226	19/503
A8L2	9140-0118		COIL-FXD MOLDED RF CHOKE 500UH 5%	24226	19/503
A8L3	9140-0118		COIL-FXD MOLDED RF CHOKE 500UH 5%	24226	19/503
A8L4	9140-0118		COIL-FXD MOLDED RF CHOKE 500UH 5%	24226	19/503
A8Q1	1855-0334		TSTR:SI FET DUAL N-CHANNEL	17856	DN377
A8Q2	1855-0380	1	TRANSISTOR MOSFET 2N4351 N-CHAN E-MODE	04713	2N4351
A8R1	0698-3150	3	RESISTOR 2.37K 1% .125W F TC=0+-100	16299	C4-1/8-T0-2371-F
A8R2	0757-0934	7	RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A8R3	0698-3433	2	RESISTOR 28.7 1% .125W F TC=0+-100	03888	PME55-1/8-T0-28R7-F
A8R4	0698-3155		RESISTOR 4.64K 1% .125W F TC=0+-100	16299	C4-1/8-T0-4641-F
A8R5	0757-0424	2	RESISTOR 1.1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1101-F
A8R6	0757-0911	3	RESISTOR 300 2% .125W F TC=0+-100	24546	C4-1/8-T0-301-G
A8R7	0757-0385	1	RESISTOR 22.1 1% .125W F TC=0+-100	19701	MF4C1/8-T0-22R1-F
A8R8	0698-3132	1	RESISTOR 261 1% .125W F TC=0+-100	16299	C4-1/8-T0-2610-F
A8R9	0757-0424		RESISTOR 1.1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1101-F
A8R10	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A8R11	0698-3433		RESISTOR 28.7 1% .125W F TC=0+-100	03888	PME55-1/8-T0-28R7-F
A8R12	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A8R13	2100-2574		RESISTOR-TRMR 500 10% C SIDE-ADJ 1-TURN	30983	ET50X501
A8R14	0683-1055		RESISTOR 1M 5% .25W FC TC=-800/+900	01121	CB1055
A8R15	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A8R16	0757-0938	1	RESISTOR 3.9K 2% .125W F TC=0+-100	24546	C4-1/8-T0-3901-G
A8R17	0757-0940		RESISTOR 4.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-4701-G
A8R18	0757-0940		RESISTOR 4.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-4701-G
A8R19	0683-1055		RESISTOR 1M 5% .25W FC TC=-800/+900	01121	CB1055
A8R20	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A8R21	0757-0922	5	RESISTOR 820 2% .125W F TC=0+-100	24546	C4-1/8-T0-821-G
A8R22	0757-0922		RESISTOR 820 2% .125W F TC=0+-100	24546	C4-1/8-T0-821-G
A8R23	0698-3446		RESISTOR 383 1% .125W F TC=0+-100	16299	C4-1/8-T0-383R-F
A8R24	0698-3446		RESISTOR 383 1% .125W F TC=0+-100	16299	C4-1/8-T0-383R-F
A8U1	1826-0073		IC:LINEAR	28480	1826-0073
A8U2	1820-0475	2	IC LM306H COMPTR	27014	LM306H
A8U3	1820-0515	3	IC MV	07263	9602PC
A9	05340-60007	1	DC AMPLIFIER/COMPENSATOR NO. 2 ASSEMBLY (SERIES 1220A) (LOADED CN 05340-20007 BLANK BOARD)	28480	05340-60007
A9C1	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A9C2	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A9C3	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A9C4	0160-0153	1	CAPACITOR-FXD 1000PF+-10% 200WVDC POLYE	56289	292P10292
A9C5	0180-0228		CAPACITOR-FXD; 22UF+-10% 15VDC TA SOLID	56289	150D226X9015B2
A9C6	0180-0230	3	CAPACITOR-FXD; 1UF+-20% 50VDC TA-SOLID	56289	150D105X0050A2
A9C7	0180-0228		CAPACITOR-FXD; 22UF+-10% 15VDC TA SOLID	56289	150D226X9015B2
A9C8	0170-0022		CAPACITOR-FXD .1UF +-20% 600WVDC POLYE	28480	0170-0022
A9C9	0160-0362	2	CAPACITOR-FXD 510PF + 5% 300WVDC MICA	28480	0160-0362
A9C10	0180-0230		CAPACITOR-FXD; 1UF+-20% 50VDC TA-SOLID	56289	150D105X0050A2
A9C11	0160-0362		CAPACITOR-FXD 510PF + 5% 300WVDC MICA	28480	0160-0362
A9C12	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A9C13	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A9CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A9CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A9L1	9140-0096		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
A9L2	9140-0096		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
A9L3	9140-0096		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
A9L4	9100-2288	1	COIL-FXD MOLDED RF CHOKE 1MH 10%	06560	09-A102K
A9Q1	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A9Q2	1854-0215		TRANSISTOR NPN SI PD=350MW FT=300MHZ	04713	SPS 3611
A9Q3	1853-0036		TRANSISTOR PNP SIL PD=310MW FT=250?HZ	04713	SPS-3612
A9R1	2100-1661	1	RESISTOR-TRMR 20K 5% WW SIDE-ADJ	32997	3057P-1-203
A9R2	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A9R3	0683-2745	1	RESISTOR 270K 5% .25W FC TC=-800/+900	01121	CB2745
A9R4	2100-2517		RESISTOR-TRMR 50K 10% C SIDE-ADJ 1-TURN	30983	ET50X503
A9R5	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A9R6	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A9R7	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A9R8	0757-0965	3	RESISTOR 51K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5102-G
A9R9	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A9R10	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A9R11	0698-6681	1	RESISTOR 9.1 5% .125W CC TC=0+850	01121	BB91G5
A9R12	0683-5145	2	RESISTOR 510K 5% .25W FC TC=-800/+900	01121	CB5145
A9R13	0757-0965		RESISTOR 51K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-5102-G
A9R14	0757-0948		RESISTOR 10K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-1002-G
A9R15	0757-0948		RESISTOR 10K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-1002-G
A9R16	0757-0907		RESISTOR 200 2% .125W F TC=0+ 100	24546	C4-1/8 T0-201-G
A9R17	0757-0955		RESISTOR 20K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-2002-G
A9R18	0757-0948		RESISTOR 10K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-1002-G
A9R19	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A9R20	0757-0965		RESISTOR 51K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-5102-G
A9TP1	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360 0124
A9TP2	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A9TP3	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A9TP4	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A9U1	1826-0073		IC:LINEAR	28480	1826-0073
A9U2	1826-0073		IC:LINEAR	28480	1826-0073
A9U3	1826-0026	2	IC LM311H COMPTR	27014	LM311H
A9U4	1826-0021		IC LM310H FOLR	27014	LM310H
A9U5	1820-0068	4	IC:SN7410N	01295	SN7410N
A9U6	1820-0515		IC MV	07263	9602PC
A10	05340-60008	3	VCO NO. 2 ASSEMBLY (SERIES 1328A) (LOADED ON 05340-20008 BLANK BOARD)	28480	05340-60008
A10C1	0180-0197		CAPACITOR-FXD: 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A10C2	0160-3789	25	CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10C3	0160-2291	2	CAPACITOR-FXD .18UF +-10% 80WVDC POLYE	56289	292P1849R8
A10C4	0180-0405	2	CAPACITOR-FXD: 1.8UF+-10% 20VDC TA	56289	150D185X9020A2
A10C5	0180-0197		CAPACITOR-FXD: 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A10C6	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10C7	0180-1745		CAPACITOR-FXD: 1.5UF+-10% 20VDC TA	56289	150D155X9020A2
A10C8	0180-0197		CAPACITOR-FXD: 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A10C9	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10C10	0160-2263	4	CAPACITOR-FXD 18PF +-5% 500WVDC CER	28480	0160-2263
A10C11	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10C12	0160-2263		CAPACITOR-FXD 18PF +-5% 500WVDC CER	28480	0160-2263
A10C13	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10C14	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10C15	0140-0173	2	CAPACITOR-FXD 305PF +-1% 100WVDC MICA	72136	DM19E305RF0100WV1CR
A10C16	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A10CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A10CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A10CR3			NOT ASSIGNED		
A10CR4△ A10CR5△	05340-80005	1 SET OF 4 DIODES	DIODE, MATCHED QUAD	28480	05340-80005
A10L1	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10L2	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10L3	9100-2275	2	COIL-FXD MOLDED RF CHOKE 82UH 10%	24226	10/822
A10L4	9140-0145	2	COIL-FXD MOLDED RF CHOKE 8.2UH 10%	24226	10/821
A10L5	9100-2265		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A10L6	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10L7	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10L8	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10L9	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10L10	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A10MP1	05340-20041		SPACER BOARD	28480	05340-20041
A10Q1	1853-0036		TRANSISTOR PNP SIL PD=310MW FT=250?HZ	04713	SPS-3612
A10Q2	1854-0073		TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A10Q3	1854-0583	2	TRANSISTOR NPN SI TO-92 PD=310MW	04713	MPS-A18
A10Q4	1854-0005	2	TRANSISTOR NPN 2N708 SI TO-18 PD=360MW	28480	1854-0005
A10Q5	1854-0345		TRANSISTOR NPN 2N5179 SI TO-72 PD=200MW	04713	2N5179
A10Q6	1854-0345		TRANSISTOR NPN 2N5179 SI TO-72 PD=200MW	04713	2N5179
A10R1	0757-0278	5	RESISTOR 1.78K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1781-F
A10R2	0698-3439		RESISTOR 178 1% .125W F TC=0+-100	16299	C4-1/8-T0-178R-F
A10R3	0757-0442	2	RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A10R4	0683-2725	31	RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A10R5	0757-0123	3	RESISTOR 34.8K 1% .125W F TC=0+-100	24546	C5-1/4-T0-3482-F
A10R6	0698-3136	2	RESISTOR 17.8K 1% .125W F TC=0+-100	16299	C4-1/8-T0-1782-F
A10R7	0757-0278		RESISTOR 1.78K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1781-F
A10R8	0757-0283	2	RESISTOR 2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2001-F
A10R9	0698-3450	2	RESISTOR 42.2K 1% .125W F TC=0+ 100	16299	C4-1/8-T0-4222-F
A10R10			NOT ASSIGNED		

△A10CR4, A10CR5, A12CR4, AND A12CR5 ARE A MATCHED SET. IF ANY ONE DIODE IS REPLACED, ALL FOUR MUST BE REPLACED.

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A10R11			NOT ASSIGNED		
A10R12	0698-0084	2	RESISTOR 2.15K 1% .125W F TC=0+-100	16299	C4-1/8-T0-2151-F
A10R13	0698-3441	2	RESISTOR 215 1% .125W F TC=0+-100	16299	C4-1/8-T0-215R-F
A10R14	0698-3447	2	RESISTOR 422 1% .125W F TC=0+-100	16299	C4-1/8-T0-422R-F
A10R15	0683-1015		RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
A10R16	0683-5125	4	RESISTOR 5.1K 5% .25W FC TC=-400/+700	01121	CB5125
A10R17	0698-6000	2	RESISTOR 2.7K 5% .125W CC TC=0+882	01121	BB2725
A10R18	0683-7515	2	RESISTOR 750 5% .25W FC TC=-400/+600	01121	CB7515
A10R19	0698-3378		RESISTOR 51 5% .125W CC TC=0+588	01121	BB5105
A10R20	0683-1025		RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A10R21	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A10R22	0757-0288	2	RESISTOR 9.09K 1% .125W F TC=0+-100	19701	MF4C1/8-T0-9091-F
A10R23	0698-3113	5	RESISTOR 100 5% .125W CC TC=0+588	01121	BB1015
A10R24	0698-3151	2	RESISTOR 2.87K 1% .125W F TC=0+-100	16299	C4-1/8-T0-2871-F
A10R25	2100-2413	4	RESISTOR-TRMR 200 10% C SIDE-ADJ 1-TURN	30983	ET50X201
A10T1	08553-6012	2	TRANSFORMER, RF (CODE = BLUE)	28480	08553-6012
A10TP1	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A10U1	1820-1179	2	IC, TTL DIGITAL	28480	1820-1179
A10Z1	9100-1788	10	COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A11	05340-60009	1	MIXER ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20009 BLANK BOARD)	28480	05340-60009
A11C1	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A11C2	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A11C3	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A11C4	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A11C5	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A11C6	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A11C7	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A11C8	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A11C9	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A11C10	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A11C11	0160-0155		CAPACITOR-FXD 3300PF +-10% 200WVDC POLYE	56289	292P33292
A11C12	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A11L1	9140-0210		COIL-FXD MOLDED RF CHOKE 100UH 5%	24226	15/103
A11L2	9140-0210		COIL-FXD MOLDED RF CHOKE 100UH 5%	24226	15/103
A11R1	0757-0928	1	RESISTOR 1.5K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1501-G
A11R2	0757-0927		RESISTOR 1.3K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1301-G
A11R3	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A11R4	0757-0950		RESISTOR 12K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1202-G
A11R5	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A11R6	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A11R7	0757-0922		RESISTOR 820 2% .125W F TC=0+-100	24546	C4-1/8-T0-821-G
A11R8	0757-0954	1	RESISTOR 18K 2% .125W F TC=0+-100 FACTORY SELECTED PART	24546	C4-1/8-T0-1802-G
A11R9	0757-0910	1	RESISTOR 270 2% .125W F TC=0+-100	24546	C4-1/8-T0-271-G
A11U1	1826-0073		IC:LINEAR	28480	1826-0073
A11U2	1858-0018	1	IC	28480	1858-0018
A12	05340-60008		VCO NO. 1 ASSEMBLY SAME AS A10, USE PREFIX A12	28480	05340-60008
A13	05340-60010	1	LIMITER/AMPLIFIER ASSEMBLY (SERIES 1408A REV. B) (LOADED ON 05340-20010 BLANK BOARD)	28480	05340-60010
A13C1	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A13C2	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A13C3	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C4	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C5	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C6	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C7	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C8	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C9	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C10	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C11	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C12	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C13	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C13	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C14	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A13C15	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C16	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13C17	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A13L1	9100-2265		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A13L2	9100-2265		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A13L3	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A13L4	9100-0368		COIL-FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A13L5	9100-0368		COIL-FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A13L6	9100-0368		COIL-FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A13L7	9100-0368		COIL-FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A13L8	9100-0368		COIL-FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A13L9	9100-0368		COIL-FXD MOLDED RF CHOKE .33UH 10%	24226	10/330
A13R1	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R2	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R3	0757-0403	1	RESISTOR 121 1% .125W F TC=0+-100	24546	C4-1/8-T0-121R-F
A13R4	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A13R5	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A13R6	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A13R7	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A13R8	0757-0915		RESISTOR 430 2% .125W F TC=0+-100	24546	C4-1/8-T0-431-G
A13R9	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R10	0757-0915		RESISTOR 430 2% .125W F TC=0+-100	24546	C4-1/8-T0-431-G
A13R11	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R12	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R13	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R14	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R15	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R16	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R17	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R18	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R19	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R20	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R21	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R22	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R23	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R24	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A13R25	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A13R26	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A13R27	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A13R28	0757-0915		RESISTOR 430 2% .125W F TC=0+-100	24546	C4-1/8-T0-431-G
A13R29	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R30	0757-0911		RESISTOR 300 2% .125W F TC=0+-100	24546	C4-1/8-T0-301-G
A13R31	2100-2574		RESISTOR-TRMR 500 10% C SIDE-ADJ 1-TURN	30983	ET50X501
A13R32	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R33	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R34	0757-0384		RESISTOR 20 1% .125W F TC=0+-100	19701	MF4C1/8-T0-20R0-F
A13R35	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R36	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R37	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R38	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A13R39	2100-2632		RESISTOR-TRMR 100 10% C SIDE-ADJ 1-TURN	30983	ET50X101
A13U1	1858-0004		IC CA3049 AMPL	02735	CA3049
A13U2	1858-0004		IC CA3049 AMPL	02735	CA3049
A14	05340-60011	1	LIMITER/AMPLIFIER/MIXER ASSEMBLY (SERIES 1532A) (LOADED ON 05340-20011 BLANK BOARD)	28480	05340-60011
A14C1	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A14C2	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C3	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C4	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C5	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C6	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A14C7	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A14C8	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A14C9	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A14C10	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A14C11	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A14C12	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C13	0140-0205	1	CAPACITOR-FXD 62PF +-5% 300WVDC MICA	72136	DM15E620J0300WV1CR
A14C14	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C15	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C16	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C17	0140-0194	2	CAPACITOR-FXD 110PF +-5% 300WVDC MICA	72136	DM15F111J0300WV1CR
A14C18	0140-0194		CAPACITOR-FXD 110PF +-5% 300WVDC MICA	72136	DM15F111J0300WV1CR
A14C19	0140-0192	2	CAPACITOR-FXD 68PF +-5% 300WVDC MICA	72136	DM15E680J0300WV1CR
A14C20	0140-0192		CAPACITOR-FXD 68PF +-5% 300WVDC MICA	72136	DM15E680J0300WV1CR

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A14C21	0180-1743		CAPACITOR-FXD; .1UF+-10% 35VDC TA-SOLID	56289	150D104X9035A2
A14C22	0160-3060		CAPACITOR-FXD .1UF +-20% 25WVDC CER	28480	0160-3060
A14C23	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A14C24	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A14C25	0180-0210		CAPACITOR-FXD; 3.3UF+-20% 15VDC TA	56289	150D335X0015A2
A14C26	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A14C27	0180-0210		CAPACITOR-FXD; 3.3UF+-20% 15VDC TA	56289	150D335X0015A2
A14CR1	1901-0050	4	DIODE-SWITCHING 80V 200NA 2NS DO-7	28480	1901-0050
A14CR2	1901-0050		DIODE-SWITCHING 80V 200NA 2NS DO-7	28480	1901-0050
A14CR3	1901-0050		DIODE-SWITCHING 80V 200NA 2NS DO-7	28480	1901-0050
A14CR4	1901-0050		DIODE-SWITCHING 80V 200NA 2NS DO-7	28480	1901-0050
A14CR5	1902-3182		DIODE-ZNR 12.1V 5% DO-7 PD=.4W TC=+.064%	04713	SZ 10939-206
A14L1	9140-0137		COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A14L2	9140-0137		COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A14L3	9140-0137		COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A14L4	9140-0137		COIL-FXD MOLDED RF CHOKE 1MH 5%	24226	19/104
A14L5	9100-2265		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A14L6	9100-2265		COIL-FXD MOLDED RF CHOKE 10UH 10%	24226	10/102
A14L7	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A14L8	9100-2272		COIL-FXD MOLDED RF CHOKE 47UH 10%	24226	10/472
A14Q1	1854-0073		TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A14Q2	1854-0073		TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A14Q3	1854-0073		TRANSISTOR NPN SI TO-72 PD=200MW	28480	1854-0073
A14R1	0757-0907	2	RESISTOR 200 2% .125W F TC=0+-100	28480	0757-0907
A14R2	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	28480	0757-0907
A14R4	0757-0900	8	RESISTOR 100 2% .125W F TC=0+-100	24546	C4-1/8-T0-101-G
A14R5	0757-0916		RESISTOR 470 2% .125W F TC=0+-100	24546	C4-1/8-T0-471-G
A14R6	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A14R7	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A14R8	0757-0915		RESISTOR 430 2% .125W F TC=0+-100	24546	C4-1/8-T0-431-G
A14R9	0757-0900		RESISTOR 100 2% .125W F TC=0+-100	24546	C4-1/8-T0-101-G
A14R10	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A14R11	0757-0916		RESISTOR 470 2% .125W F TC=0+-100	24546	C4-1/8-T0-471-G
A14R12	0757-0924		RESISTOR 1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1001-G
A14R13	0757-0926	4	RESISTOR 1.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1201-G
A14R14	0757-0926		RESISTOR 1.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1201-G
A14R15	0757-0900		RESISTOR 100 2% .125W F TC=0+-100	24546	C4-1/8-T0-101-G
A14R16	0757-0926		RESISTOR 1.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1201-G
A14R17	0757-0916		RESISTOR 470 2% .125W F TC=0+-100	24546	C4-1/8-T0-471-G
A14R18	0757-0911		RESISTOR 300 2% .125W F TC=0+-100	24546	C4-1/8-T0-301-G
A14R19	0757-0955		RESISTOR 20K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2002-G
A14R20	0757-0926		RESISTOR 1.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1201-G
A14R21	0698-3156	1	RESISTOR 14.7K 1% .125W F TC=0+-100	16299	C4-1/8-T0-1472-F
A14R22	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-T0-5101-G
A14R23	0757-0915		RESISTOR 430 2% .125W F TC=0+-100	24546	C4-1/8-T0-431-G
A14R24	0757-0948		RESISTOR 10K 2% .125W F TC=0+-100	24546	C4-1/8-T0-1002-G
A14U1	1820-0270	1	IC AMPL	07263	733HC
A14U2	1820-0475		IC LM306H COMPTR	27014	LM306H
A15	05340-60012	1	10 MHZ DOUBLER ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20012 BLANK BOARD)	28480	05340-60012
A15C1	0160-2259	1	CAPACITOR-FXD 12PF +-5% 500WVDC CER	28480	0160-2259
A15C2	0160-2203	1	CAPACITOR-FXD 91PF +-5% 300WVDC MICA	28480	0160-2203
A15C3	0121-0180	1	CAPACITOR-V TRMR-CER 15/60PF 200V PC-MTG	0086S	304324 15/60PF N1500
A15C4	0160-2261	1	CAPACITOR-FXD 15PF +-5% 500WVDC CER	28480	0160-2261
A15C5	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A15C6	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A15C7	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A15C8	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A15C9	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
A15C10	0140-0191		CAPACITOR-FXD 56PF +-5% 300WVDC MICA	72136	DM15E560J0300WV1CR
A15C11	0121-0105	2	CAPACITOR-V TRMR-CER 9/35PF 200V PC-MTG	0086S	304324 9/35PF N650
A15C12	0140-0191		CAPACITOR-FXD 56PF +-5% 300WVDC MICA	72136	DM15E560J0300WV1CR
A15C13	0121-0105		CAPACITOR-V TRMR-CER 9/35PF 200V PC-MTG	0086S	304324 9/35PF N650
A15C14	0160-2249	2	CAPACITOR-FXD 4.7PF +-.25PF 500WVDC CER	28480	0160-2249
A15C15	0160-2249		CAPACITOR-FXD 4.7PF +-.25PF 500WVDC CER	28480	0160-2249
A15CR1	1901-0535		DIODE-SCHOTTKY	28480	1901-0535
A15CR2	1901-0535		DIODE-SCHOTTKY	28480	1901-0535
A15L1	9100-1616	1	COIL-FXD MOLDED RF CHOKE 1.5UH 10%	24226	15/151
A15L2	9100-2274	3	COIL-FXD MOLDED RF CHOKE 68UH 10%	24226	10/682
A15L3	9100-2274		COIL-FXD MOLDED RF CHOKE 68UH 10%	24226	10/682
A15L4	9100-2274		COIL-FXD MOLDED RF CHOKE 68UH 10%	24226	10/682
A15L5	9100-1614	2	COIL-FXD MOLDED RF CHOKE .82UH 10%	24226	15/820

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A15L6	9100-1614		COIL-FXD MOLDED RF CHOKE .82UH 10%	24226	15/820
A15R1	0757-0916		RESISTOR 470 2% .125W F TC=0+-100	24546	C4-1/8-T0-471-G
A15R2	0698-3440		RESISTOR 196 1% .125W F TC=0+-100	16299	C4-1/8-T0-196R-F
A15R3	0698-3440		RESISTOR 196 1% .125W F TC=0+-100	16299	C4-1/8-T0-196R-F
A15R4	0757-0401		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A15R5	0757-0401		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A15R6	0757-0438		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5111-F
A15R7	0698-3158	3	RESISTOR 23.7K 1% .125W F TC=0+-100	16299	C4-1/8-T0-2372-F
A15R8	0757-0416		RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A15R9	0757-0416		RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A15R10	0757-0278		RESISTOR 1.78K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1781-F
A15R11	0757-0912	1	RESISTOR 330 2% .125W F TC=0+-100	24546	C4-1/8-T0-331-G
A15R12	0757-0441	1	RESISTOR 8.25K 1% .125W F TC=0+-100	24546	C4-1/8-T0-8251-F
A15R13	0757-0199		RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A15R14	0757-0428	1	RESISTOR 1.62K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1621-F
A15U1	1858-0004		IC CA3049 AMPL	02735	CA3049
A16	05340-60015	1	MOTHER BOARD ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20015 BLANK BOARD)	28480	05340-60015
A16C1	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C2	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C3	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C4	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C5	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C6	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C7	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16C8	0160-3277		CAPACITOR-FXD .01UF +-20% 50WVDC CER	28480	0160-3277
A16J1	1250-0257	9	CONNECTOR-RF SMB M PC	28480	1250-0257
A16J2	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A16J3	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A16J4	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A16J5	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A16J6	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A16J7	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
XA4	1251-1668	12	CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA5	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA6	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA7	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA8	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA9	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA10	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA11	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA12	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA13	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA14	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
XA15	1251-1668		CONNECTOR:RT-ANGLE MOUNT	28480	1251-1668
A17	05340-60041	1	DIRECT COUNT AMPLIFIER ASSEMBLY	28480	05340-60041
	05340-00019	1	COVER, HOUSING	28480	05340-00019
	05340-20034	1	HOUSING, DC AMPLIFIER	28480	05340-20034
	05340-20041	6	SPACER BOARD	28480	05340-20041
A17W1	05340-60046	1	CABLE ASSEMBLY, DIRECT COUNT	28480	05340-60046
A17A1	05340-60038	1	DIRECT COUNT AMPLIFIER BOARD ASSEMBLY (SERIES 1416A REV. B) (LOADED ON 05342-20038 BLANK BOARD)	28480	05340-60038
A17A1C1	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X0006B2
A17A1C2	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X0006B2
A17A1C3	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C4	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C5	0180-0155	3	CAPACITOR-FXD; 2.2UF+-20% 20VDC TA	56289	150D225X0020A2
A17A1C6	0180-0155		CAPACITOR-FXD; 2.2UF+-20% 20VDC TA	56289	150D225X0020A2
A17A1C7	0180-0155		CAPACITOR-FXD; 2.2UF+-20% 20VDC TA	56289	150D225X0020A2
A17A1C8	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C9	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C10	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C11	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A17A1C12	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A17A1C13	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X0006B2
A17A1C14	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X0006B2
A17A1C15	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A17A1C16	0160-2248	1	CAPACITOR-FXD 4.3PF +-.25PF 500WVDC CER	28480	0160-2248
A17A1C17			NOT ASSIGNED		
A17A1C18	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C19	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A17A1C20	0180-1746	2	CAPACITOR-FXD; 15UF+-10% 20VDC TA-SOLID	56289	150D156X902082
A17A1C21			NOT ASSIGNED		
A17A1C22	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1C23	0160-3789		CAPACITOR-FXD 560PF +-20% 50WVDC CER	28480	0160-3789
A17A1CR1	1901-0535		DIODE-SCHOTTKY	28480	1901-0535
A17A1CR2	1901-0535		DIODE-SCHOTTKY	28480	1901-0535
A17A1CR3	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A17A1CR4					
A17A1CR5	05340-80006	1	DIODE, MATCHED QUAD	28480	05340-80006
A17A1E1			NOT ASSIGNED		
A17A1E2	9170-0029		CORE-SHIELDING BEAD	02114	56-590-65A2/4A
A17A1E3	9170-0029		CORE-SHIELDING BEAD	02114	56-590-65A2/4A
A17A1J1	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A17A1J2	1250-0257		CONNECTOR-RF SMB M PC	28480	1250-0257
A17A1L1	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A17A1L2	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A17A1L3	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A17A1L4	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A17A1L5	9100-2252	1	COIL-FXD MOLDED RF CHOKE .27UH 10%	24226	10/270
A17A1L6	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
A17A1L7	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
A17A1R1	0698-5180	1	RESISTOR 2K 5% .125W CC TC=0+882	01121	BB2025
A17A1R2	0698-3113		RESISTOR 100 5% .125W CC TC=0+588	01121	BB1015
A17A1R3	0698-3113		RESISTOR 100 5% .125W CC TC=0+588	01121	BB1015
A17A1R4	0683-2035	2	RESISTOR 20K 5% .25W FC TC=-400/+800	01121	CB2035
A17A1R5			NOT ASSIGNED		
A17A1R6			NOT ASSIGNED		
A17A1R7	0683-2035		RESISTOR 20K 5% .25W FC TC=-400/+800	01121	CB2035
A17A1R8			NOT ASSIGNED		
A17A1R9			NOT ASSIGNED		
A17A1R10	0683-2015	1	RESISTOR 200 5% .25W FC TC=-400/+600	01121	CB2015
A17A1R11	2100-1757	1	RESISTOR-TRMR 500 5% WW SIDE-ADJ 1-TURN	GB027	CT-106-4
A17A1R12	0683-7525	1	RESISTOR 7.5K 5% .25W FC TC=-400/+700	01121	CB7525
A17A1R13	0698-3113		RESISTOR 100 5% .125W CC TC=0+588	01121	BB1015
A17A1R14	0698-5177	1	RESISTOR 820 5% .125W CC TC=0+882	01121	BB8215
A17A1R15	0675-1021	1	RESISTOR 1K 10% .125W CC TC=0+882	01121	BB1021
A17A1R16	0698-3378		RESISTOR 51 5% .125W CC TC=0+588	01121	BB5105
A17A1R17	0698-3381	1	RESISTOR 150 5% .125W CC TC=0+882	01121	BB1515
A17A1R18	0698-3114	1	RESISTOR 300 5% .125W CC TC=0+882	01121	BB3015
A17A1R19			NOT ASSIGNED		
A17A1R20	0683-5145		RESISTOR 510K 5% .25W FC TC=-800/+900	01121	CB5145
A17A1R21	0683-3345		RESISTOR 330K 5% .25W FC TC=-800/+900	01121	CB3345
A17A1R22	2100-1759	1	RESISTOR-TRMR 2K 5% WW SIDE-ADJ 1-TURN	GB027	CT-106-4
A17A1R23	0698-5174		RESISTOR 200 5% .125W CC TC=0+882	01121	BB2015
A17A1TP1	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A17A1U1	1826-0073		IC:LINEAR	28480	1826-0073
A17A1U2	1826-0026		IC LM311H COMPTR	27014	LM311H
A17A1U3	1820-0754		IC AMPL	28480	1820-0754
A17A1U4			NOT ASSIGNED		
A17A1U5	1820-0753	1	IC GATE	28480	1820-0753
			A17A1 MISCELLANEOUS PARTS		
	05340-20041		SPACER BOARD	28480	05340-20041
A18	05340-60036	1	10 MHZ OSCILLATOR ASSEMBLY (SERIES 1220A) STANDARD (LOADED ON 05340-20036 BLANK BOARD)	28480	05340-60036
	0960-0153	1	OSCILLATOR TEMP. COMPENSATOR 10 MHZ	28480	0960-0153
A18C1	0160-2143	2	CAPACITOR-FXD 2000PF +80-20% 1000WVDC	28480	0160-2143
A18C2	0160-2143		CAPACITOR-FXD 2000PF +80-20% 1000WVDC	28480	0160-2143
A18L1	9140-0179	2	COIL-FXD MOLDED RF CHOKE 22UH 10%	24226	15/222
A18L2	9140-0179		COIL-FXD MOLDED RF CHOKE 22UH 10%	24226	15/222
A19	05340-60031	1	INTERFACE A ASSEMBLY(STD. INSTRUMENT) (SERIES 1220A) (LOADED ON 05340-20031 BLANK BOARD)	28480	05340-60031
A19C1	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A19C2	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A19C3	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A19C4	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A19C5	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A19C6	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A19CR1	1901-0040		DIODE SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A19L1			NOT ASSIGNED		
A19L2	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
A19L3	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A19Q1	1854-0560	1	TRANSISTOR NPN SI DARL PD=310MW	04713	SPS6740
A19R1	1810-0041	3	NETWORK RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0041
A19R2	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A19R3	0683-1025		RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A19R4	0683-1025		RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A19R5	0683-1015		RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
A19R6	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A19R7	0683-2715	2	RESISTOR 270 5% .25W FC TC=-400/+600	01121	CB2715
A19R8	0683-2715		RESISTOR 270 5% .25W FC TC=-400/+600	01121	CB2715
A19R9	0683-4715	7	RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A19R10	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A19R11	0683-2025	2	RESISTOR 2K 5% .25W FC TC=-400/+700	01121	CB2025
A19R12	0683-2025		RESISTOR 2K 5% .25W FC TC=-400/+700	01121	CB2025
A19R13	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A19R14	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A19U1	1820-0537		IC SN74 13 N SCHMITT	01295	SN7413N
A19U2	1820-0174	6	IC=TTL HEX INVERTER	01295	SN7404N
A19U3	1820-0068		IC=SN7410N	01295	SN7410N
A19U4	1820-0716	3	IC SN74 161 N COUNTER	01295	SN74161N
A19U5	1820-0054		IC=SN7400N	01295	SN7400N
A19U6	1820-0054		IC=SN7400N	01295	SN7400N
A19U7	1820-0706	1	IC COMPTR	07263	9324DC
A19Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A20	05340-60073	1	TIME BASE BOARD ASSEMBLY (SERIES 1348A) (LOADED ON 05340-20018 BLANK BOARD)	28480	05340-60073
A20C1	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X0006B2
A20C2	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A20C3	0160-0196	1	CAPACITOR-FXD 24PF +-5% 300WVDC MICA	28480	0160-0196
A20R1	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A20R2	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A20R3	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A20R4	0683-1215	1	RESISTOR 120 5% .25W FC TC=-400/+600	01121	CB1215
A20U1	1820-0055	7	IC=SN7490N	01295	SN7490N
A20U2	1820-0054		IC=SN7400N	01295	SN7400N
A20U3	1820-0077	7	IC=TTL DUAL D FLIP/FLOP	01295	SN7474N
A20U4	1820-0054		IC=SN7400N	01295	SN7400N
A20U5	1820-0099	3	IC=SN7493N	01295	SN7493N
A20U6	1820-0099		IC=SN7493N	01295	SN7493N
A20U7	1820-0099		IC=SN7493N	01295	SN7493N
A20U8	1820-0055		IC=SN7490N	01295	SN7490N
A20U9	1820-0055		IC=SN7490N	01295	SN7490N
A20U10	1820-0077		IC=TTL DUAL D FLIP/FLOP	01295	SN7474N
A20U11	1820-0077		IC=TTL DUAL D FLIP/FLOP	01295	SN7474N
A20U12	1820-0055		IC=SN7490N	01295	SN7490N
A20U13	1820-0174		IC=TTL HEX INVERTER	01295	SN7404N
A20U14	1820-0174		IC=TTL HEX INVERTER	01295	SN7404N
A20U15	1820-0055		IC=SN7490N	01295	SN7490N
A20U16	1820-0055		IC=SN7490N	01295	SN7490N
A20U17	1820-0069	3	IC=SN7420N	01295	SN7420N
A20U18	1820-0716		IC SN74 161 N COUNTER	01295	SN74161N
A20U19	1820-0904	4	IC COMPTR	07263	93L24DC
A20U20	1820-0904		IC COMPTR	07263	93L24DC
A20U21	1820-0716		IC SN74 161 N COUNTER	01295	SN74161N
A20U22	1820-0055		IC=SN7490N	01295	SN7490N
A20U23	1820-0615	1	IC MC 8312P MUXR	04713	MC8312P
A20U24	1820-1096	1	IC SN54 196 J	01295	SN54196J
A20U25	1820-0261	1	IC=TTL MULTIVIBRATOR	01295	SN74121N
A20U26	1820-0904		IC COMPTR	07263	93L24DC
A20U27	1820-0904		IC COMPTR	07263	93L24DC
A20U28	1820-0214		IC=TTL BCD-TO-DECIMAL DECODER	01295	SN7442N
A20Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A21	05340-60021	1	CONTROL BOARD ASSEMBLY (SERIES 1252) (LOADED ON 05340-20021 BLANK BOARD)	28480	05340-60021
A21C1	0180-0106		CAPACITOR-FXD; 6OUF+-20% 6VDC TA-SOLID	56289	150D606X000682
A21C2	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A21C3	0180-0197		CAPACITOR-FXD; 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A21C4	0180-0230		CAPACITOR-FXD; 1UF+-20% 50VDC TA SOLID	56289	150D105X0050A2
A21CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO 35	28480	1901-0040
A21CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A21R1	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A21R2	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A21R3	1810-0041		NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0041
A21R4	1810-0041		NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0041
A21R5	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A21R6	0757-0956	1	RESISTOR 22K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2202-G
A21R7	0757-0957	1	RESISTOR 24K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2402-G
A21U1	1820-0616	2	IC MUXR	07263	9322DC
A21U2	1820-0788	1	IC SN74 174 N FLIP-FLOP	01295	SN74174N
A21U3	1816-0003	1	IC:ROM BIPOLAR 256-BIT	28480	1816-0003
A21U4	1816-0004	1	IC:ROM BIPOLAR OUTPUT & QUALIFIER	28480	1816-0004
A21U5	1820-0054		IC:SN7400N	01295	SN7400N
A21U6	1820-0054		IC:SN7400N	01295	SN7400N
A21U7	1820-0054		IC:SN7400N	01295	SN7400N
A21U8	1820-0054		IC:SN7400N	01295	SN7400N
A21U9	1820-0515		IC MV	07263	9602PC
A21U10	1820-0077		IC:TTL DUAL D FLIP/FLOP	01295	SN7474N
A21U11	1820-0174		IC:TTL HEX INVERTER	01295	SN7404N
A21U12	1820-0640	1	IC SN74 150 N MUXR	01295	SN74150N
A21U13	1820-0495	1	IC DECODER	07263	9311DC
A21U14	1820-0054		IC:SN7400N	01295	SN7400N
A21U15	1820-0054		IC:SN7400N	01295	SN7400N
A21U16	1820-0068		IC:SN7410N	01295	SN7410N
A21Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/48
A22	05340-60016	1	HIGH FREQUENCY COUNTER ASSEMBLY (SERIES 1328A) (LOADED ON 05340-20016 BLANK BOARD)	28480	05340-60016
A22C1	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A22C2	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A22C3	0140-0176		CAPACITOR-FXD 100PF +-2% 300WVDC MICA	72136	DM15F101G0300WV1CR
A22C4			NOT ASSIGNED		
A22C5			NOT ASSIGNED		
A22C6			NOT ASSIGNED		
A22C7	0140-0176		CAPACITOR-FXD 100PF +-2% 300WVDC MICA	72136	DM15F101G0300WV1CR
A22C8	0140-0176		CAPACITOR-FXD 100PF +-2% 300WVDC MICA	72136	DM15F101G0300WV1CR
A22C9	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A22C10	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A22C11	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A22C12	0160-3878	2	CAPACITOR-FXD 1000PF +-20% 100WVDC CER	28480	0160-3878
A22C13	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A22C14	0160-3878		CAPACITOR-FXD 1000PF +-20% 100WVDC CER	28480	0160-3878
A22C15	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A22CR1	1901-0535		DIODE-SCHOTTKY	28480	1901-0535
A22J1	1250-1368	1	CONNECTOR-RF SMB M PC	28480	1250-1368
A22L1	9140-0158		COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A22Q1	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q2	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q3	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q4	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q5	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q6	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q7	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q8	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q9	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q10	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q11	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q12	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q13	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q14	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q15	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A22Q16	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q17	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22Q18	1854-0092	2	TRANSISTOR NPN SI PD=200MW FT=600MHZ	28480	1854-0092
A22Q19	1854-0009	1	TRANSISTOR NPN 2N709 SI TO-18 PD=300MW	28480	1854-0009
A22Q20	1854-0092		TRANSISTOR NPN SI PD=200MW FT=600MHZ	28480	1854-0092
A22Q21	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A22R1	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A22R2	0683-1015		RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
A22R3	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A22R4	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A22R5	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A22R6	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A22R7	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A22R8	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A22R9	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2001-G
A22R10	0757-0934		RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A22R11	0683-5115	7	RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115
A22R12	0757-0934		RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A22R13	0683-5115		RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115
A22R14	0757-0934		RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A22R15	0683-5115		RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115
A22R16	0757-0934		RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A22R17	0683-5115		RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115
A22R18	0757-0934		RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A22R19	0683-5115		RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115
A22R20	0757-0934		RESISTOR 2.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2701-G
A22R21	0683-5115		RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115
A22R22	0683-1515	6	RESISTOR 150 5% .25W FC TC=-400/+600	01121	CB1515
A22R23	0683-1515		RESISTOR 150 5% .25W FC TC=-400/+600	01121	CB1515
A22R24	0683-1515		RESISTOR 150 5% .25W FC TC=-400/+600	01121	CB1515
A22R25	0683-1515		RESISTOR 150 5% .25W FC TC=-400/+600	01121	CB1515
A22R26	0683-1515		RESISTOR 150 5% .25W FC TC=-400/+600	01121	CB1515
A22R27	0683-1515		RESISTOR 150 5% .25W FC TC=-400/+600	01121	CB1515
A22R28	0757-0900		RESISTOR 100 2% .125W F TC=0+-100	24546	C4-1/8-T0-101-G
A22R29	0757-0909	1	RESISTOR 240 2% .125W F TC=0+-100	24546	C4-1/8-T0-241-G
A22R30	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A22R31	0683-4715		RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A22R32	0683-4715		RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A22R33	0683-4715		RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A22R34	0683-4715		RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A22R35	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A22R36	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A22R37	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A22R38	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A22R39	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A22R40	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A22R41	0683-4725	1	RESISTOR 4.7K 5% .25W FC TC=-400/+700	01121	CB4725
A22R42	0683-4715		RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A22R43	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A22R44	0683-1025		RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A22R45	0683-1015		RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
A22R46	0683-6815		RESISTOR 680 5% .25W FC TC=-400/+600	01121	CB6815
A22R47	0683-4715		RESISTOR 470 5% .25W FC TC=-400/+600	01121	CB4715
A22R48	0683-3915	1	RESISTOR 390 5% .25W FC TC=-400/+600	01121	CB3915
A22R49	0683-1015		RESISTOR 100 5% .25W FC TC=-400/+500	01121	CB1015
A22R50	0683-5625	1	RESISTOR 5.6K 5% .25W FC TC=-400/+700	01121	CB5625
A22R51	0683-1225	2	RESISTOR 1.2K 5% .25W FC TC=-400/+700	01121	CB1225
A22R52	2100-1738	1	RESISTOR-TRMR 10K 10% C TOP-ADJ 1-TURN	30983	ET50W103
A22R53	0683-1225		RESISTOR 1.2K 5% .25W FC TC=-400/+700	01121	CB1225
A22R54	0757-0907		RESISTOR 200 2% .125W F TC=0+-100	24546	C4-1/8-T0-201-G
A22R55	0757-0936	3	RESISTOR 3.3K 2% .125W F TC=0+-100	24546	C4-1/8-T0-3301-G
A22U1	1820-0275	1	IC MC 1039P XLTR-LGC	04713	MC1039P
A22U2	1820-1019	1	IC COUNTER	28480	1820-1019
A22U3	1820-0560	2	IC:DIGITAL	28480	1820-0560
A22U4	1820-0751	1	IC SN74 196 N COUNTER	01295	SN74196N
A22U5	1820-0610	1	IC MC 8309P MUXR	04713	MC8309P
A22U6	1820-0557	2	IC FLIP-FLOP	28480	1820-0557
A22U7	1820-0557		IC FLIP-FLOP	28480	1820-0557
A22U8	1820-0560		IC:DIGITAL	28480	1820-0560
A22U9	5086-7089	1	TRIGGER AMPLIFIER	28480	5086-7089
A22XU2	1200-0475		CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005
A22XU3	1200-0475		CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005
A22XU6	1200-0475		CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005
A22XU7	1200-0475		CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005
A22XU8	1200-0475		CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005

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Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A22XU9	1200-0475		CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005
A22Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A22Z2	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A23	05340-60030	1	COUNT REGISTER ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20030 BLANK BOARD)	28480	05340-60030
A23C1	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A23C2	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A23R1	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A23U1	1820-0596	1	IC DM74L 74N FLIP-FLOP	27014	DM74L74N
A23U2	1820-0986	6	IC DM86L 75N COUNTER	27014	DM86L75N
A23U3	1820-0986		IC DM86L 75N COUNTER	27014	DM86L75N
A23U4	1820-0986		IC DM86L 75N COUNTER	27014	DM86L75N
A23U5	1820-0986		IC DM86L 75N COUNTER	27014	DM86L75N
A23U6	1820-0986		IC DM86L 75N COUNTER	27014	DM86L75N
A23U7	1820-0986		IC DM86L 75N COUNTER	27014	DM86L75N
A23U8	1820-0659	2	IC RGTR	07263	93L00DC
A23U9	1820-0659		IC RGTR	07263	93L00DC
A23U10	1820-0910	2	IC SN74LS 83 N ADDER	01295	SN74LS83N
A23U11	1820-0910		IC SN74LS 83 N ADDER	01295	SN74LS83N
A23U12	1820-0583	2	IC DM74L 00N GATE	27014	DM74L00N
A23U13	1820-0588	1	IC DM74L 20N GATE	27014	DM74L20N
A23U14	1820-0054		IC:SN7400N	01295	SN7400N
A23U15	1820-0054		IC:SN7400N	01295	SN7400N
A23U16	1820-0077		IC:TTL DUAL D FLIP/FLOP	01295	SN7474N
A23U17	1820-0077		IC:TTL DUAL D FLIP/FLOP	01295	SN7474N
A23U18	1820-0054		IC:SN7400N	01295	SN7400N
A23U19	1820-0077		IC:TTL DUAL D FLIP/FLOP	01295	SN7474N
A23U20	1820-0282	1	IC SN74 86 N GATE	01295	SN7486N
A23U21	1820-0068		IC:SN7410N	01295	SN7410N
A23Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A24	05340-60019	1	DISPLAY REGISTER ASSEMBLY (SERIES 1236A) (LOADED ON 05340-20019 BLANK BOARD)	28480	05340-60019
A24C1	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A24C2	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A24J1A	1251-2035	2	CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-300
A24J1B	1251-2035		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-300
A24U1	1820-0294	5	IC:TTL 8-BIT SHIFT REGISTER	27014	DM8570N
A24U2	1820-0657	1	IC ENCODER	07263	9318DC
A24U3	1820-0174		IC:TTL HEX INVERTER	01295	SN7404N
A24U4	1820-0616		IC MUXR	07263	9322DC
A24U5	1820-0069		IC:SN7420N	01295	SN7420N
A24U6	1820-0587	2	IC DM74L 10N GATE	27014	DM74L10N
A24U7	1820-0583		IC DM74L 00N GATE	27014	DM74L00N
A24U8	1820-0054		IC:SN7400N	01295	SN7400N
A24U9	1820-0294		IC:TTL 8-BIT SHIFT REGISTER	27014	DM8570N
A24U10	1820-0069		IC:SN7420N	01295	SN7420N
A24U11	1820-0294		IC:TTL 8-BIT SHIFT REGISTER	27014	DM8570N
A24U12	1820-0589	1	IC DM74L 30N GATE	27014	DM74L30N
A24U13	1820-0054		IC:SN7400N	01295	SN7400N
A24U14	1820-0174		IC:TTL HEX INVERTER	01295	SN7404N
A24U15	1820-0587		IC DM74L 10N GATE	27014	DM74L10N
A24U16	1820-0294		IC:TTL 8-BIT SHIFT REGISTER	27014	DM8570N
A24U17	1820-0294		IC:TTL 8-BIT SHIFT REGISTER	27014	DM8570N
A24U18	1820-1047	1	IC SN74L 42AN DECODER	27014	DM74L42AN
A24Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A24Z2	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A25	05340-60020	1	DISPLAY ASSEMBLY (SERIES 1236A) (LOADED ON 05340-20020 BLANK BOARD)	28480	05340-60020
A25C1	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A25C2	0160-3879		CAPACITOR-FXD .01UF + 20% 100WVDC CER	28480	0160-3879
A25CR1	1902-3301	1	DIODE-ZNR 34.8V 5% DO-7 PD=.4W TC=+.078%	04713	SZ 10939 338
A25DS1	1970-0054	8	TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS1	1200-0405	8	SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44
A25DS2	1970-0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS2	1200-0405		SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44
A25DS3	1970-0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS3	1200-0405		SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44

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Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A25DS4	1970-0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS4	1200-0405		SOCKET-TUBE 14-CONT NIXIE PKG	83781	RTS-44
A25DS5	1970-0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS5	1200-0405		SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44
A25DS6	1970 0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS6	1200-0405		SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44
A25DS7	1970-0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS7	1200-0405		SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44
A25DS8	1970-0054		TUBE ELCTRN B5870S IND-ALPHANUMERIC	28480	1970-0054
A25XDS8	1200-0405		SOCKET-TUBE 14-CONT NIXIE-PKG	83781	RTS-44
A25DS9	2140-0313	9	LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25XDS9					
A25DS10	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS11	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS12	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS13	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS14	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS15	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS16	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25DS17	2140-0313		LAMP-GLOW T-2 BULB 58V	74276	NE2H FROSTED
A25Q1	1854-0533	12	TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A25Q2	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A25Q3	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A25Q4	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A25Q5	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A25Q6	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A25Q7	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A25R1	0683-4735	7	RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R2	0683-4735		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R3	0683-4735		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R4	0683-4735		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R5	0757-0943	9	RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A25R6	0683-4735		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R7	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A25R8	0683-4735		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R9	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A25R10	0683-4735		RESISTOR 47K 5% .25W FC TC=-400/+800	01121	CB4735
A25R11	0683-2045	1	RESISTOR 200K 5% .25W FC TC=-800/+900	01121	CB2045
A25R12	0683-2735	8	RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25R13	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R14	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25R15	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R16	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25R17	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R18	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25R19	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R20	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25R21	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R22	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25R23	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R24	0683-2425	1	RESISTOR 2.4K 5% .25W FC TC=-400/+700	01121	CB2425
A25R25	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A25R26	0683-5125		RESISTOR 5.1K 5% .25W FC TC=-400/+700	01121	CB5125
A25R27	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A25U1	1820-1161	10	IC DECODER	28480	1820-1161
A25U2	1820-1161		IC DECODER	28480	1820-1161
A25U3	1820-1161		IC DECODER	28480	1820-1161
A25U4	1820-1161		IC DECODER	28480	1820-1161
A25U5	1820-1161		IC DECODER	28480	1820-1161
A25U6	1820-1161		IC DECODER	28480	1820-1161
A25U7	1820-1161		IC DECODER	28480	1820-1161
A25U8	1820-1161		IC DECODER	28480	1820-1161
A25U9	1820-1161		IC DECODER	28480	1820-1161
A25U10	1820-1161		IC DECODER	28480	1820-1161
			A25 MISCELLANEOUS		
	05330-00027	1	RETAINER, RIGHT (SINGLE BRACKET)	28480	05330-00027
	05330-40002	3	BLOCK, ANNUNCIATOR	28480	05330-40002
	05340-00006	1	SHIELD, NIXIE	28480	05340-00006
	05340-00007	1	BRACKET, ANNUNCIATOR (DOUBLE BRACKET)	28480	05340-00007
	05340-60057	1	CABLE ASSEMBLY, DISPLAY BLANKING	28480	05340-60057
	05340-80001	1	INDICATOR, OF LO, LOCK, GATE	28480	05340-80001
	05340-80002	1	INDICATOR, GHZ, MHZ, KHZ	28480	05340-80002
	05340-80003	1	INDICATOR, RMT, DIR, "*"	28480	05340-80003

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A26	05340-60037	1	BLANKING ASSEMBLY (SERIES 1236A) (LOADED ON 05340-20037 BLANK BOARD)	28480	05340-60037
A26Q1	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A26Q2	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A26Q3	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A26Q4	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A26Q5	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A26Q6	1853-0317	5	TRANSISTOR PNP SI PD=625MW FT=100MHZ	28480	1853-0317
A26Q7	1853-0317		TRANSISTOR PNP SI PD=625MW FT=100MHZ	28480	1853-0317
A26Q8	1853-0317		TRANSISTOR PNP SI PD=625MW FT=100MHZ	28480	1853-0317
A26Q9	1853-0317		TRANSISTOR PNP SI PD=625MW FT=100MHZ	28480	1853-0317
A26Q10	1853-0317		TRANSISTOR PNP SI PD=625MW FT=100MHZ	28480	1853-0317
A26R1	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A26R2	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A26R3	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A26R4	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A26R5	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A26R6	0683-2245	5	RESISTOR 220K 5% .25W FC TC=-800/+900	01121	CB2245
A26R7	0683-2245		RESISTOR 220K 5% .25W FC TC=-800/+900	01121	CB2245
A26R8	0683-2245		RESISTOR 220K 5% .25W FC TC=-800/+900	01121	CB2245
A26R9	0683-2245		RESISTOR 220K 5% .25W FC TC=-800/+900	01121	CB2245
A26R10	0683-2245		RESISTOR 220K 5% .25W FC TC=-800/+900	01121	CB2245
A26R11	0683-3325	5	RESISTOR 3.3K 5% .25W FC TC=-400/+700	01121	CB3325
A26R12	0683-3325		RESISTOR 3.3K 5% .25W FC TC=-400/+700	01121	CB3325
A26R13	0683-3325		RESISTOR 3.3K 5% .25W FC TC=-400/+700	01121	CB3325
A26R14	0683-3325		RESISTOR 3.3K 5% .25W FC TC=-400/+700	01121	CB3325
A26R15	0683-3325		RESISTOR 3.3K 5% .25W FC TC=-400/+700	01121	CB3325
A26R16	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A26R17	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A26R18	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A26R19	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A26R20	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A27	05340-60026	1	RESOLUTION SWITCH ASSEMBLY(SERIES 1236A)	28480	05340-60026
	05340-60045	1	SLIDE ASSEMBLY	28480	05340-60045
	5020-3440	1	SPRING, DETENT	28480	5020-3440
A28	05340-60022	1	REGULATORS ASSEMBLY, -15 AND +175V (SERIES 1220A) (LOADED ON 05340-20022 BLANK BOARD)	28480	05340-60022
A28C1	0160-2141	5	CAPACITOR-FXD 680PF +-20% 1000WVDC CER	28480	0160-2141
A28C2	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A28C3	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A28C4	0160-2141		CAPACITOR-FXD 680PF +-20% 1000WVDC CER	28480	0160-2141
A28C5	0160-2141		CAPACITOR-FXD 680PF +-20% 1000WVDC CER	28480	0160-2141
A28C6	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA-SOLID	56289	150D606X000682
A28C7	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A28CR1	1902-0049	1	DIODE-ZNR 6.19V 5% DO-7 PD=.4W TC=+.022%	04713	SZ 10939-122
A28CR2	1902-3234	2	DIODE-ZNR 19.6V 5% DO-7 PD=.4W TC=+.073%	04713	SZ 10939-266
A28CR3	1902-3428	1	DIODE-ZNR 100V 5% DO-7 PD=.4W TC=+.083%	04713	SZ 10939-470
A28CR4	1902-3393	1	DIODE-ZNR 75V 5% DO-7 PD=.4W TC=+.077%	04713	SZ 10939-434
A28Q1	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A28Q2	1853-0240	1	TRANSISTOR PNP SI TO-39 PD=1W	28480	1853-0240
A28Q3	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A28Q4	1854-0232	1	TRANSISTOR NPN SI TO-39 PD=1W FT=15MHZ	28480	1854-0232
A28Q5	1853-0254	2	TRANSISTOR PNP SI PD=30W FT=3MHZ	28480	1853-0254
FOR A28Q5	1205-0219	4	HEAT-DISSIPATOR SGL SHUNT PKG	28480	1205-0219
A28Q6	1854-0330	1	TRANSISTOR NPN SI PD=21W FT=10MHZ	28480	1854-0330
FOR A28Q6	1205-0219		HEAT-DISSIPATOR SGL SHUNT PKG	28480	1205-0219
A28Q7	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A28Q8	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A28Q9	1854-0533		TRANSISTOR NPN SI PD=625MW FT=100MHZ	28480	1854-0533
A28Q10	1854-0039	3	TRANSISTOR NPN 2N3053 SI TO-5 PD=1W	04713	2N3053
FOR A28Q10	1205-0033	3	HEAT-DISSIPATOR SGL TO-5/TO-39 PKG	28480	1205-0033
A28R1	0683-4705	1	RESISTOR 47 5% .25W FC TC=-400/+500	01121	CB4705
A28R2	0683-2735		RESISTOR 27K 5% .25W FC TC=-400/+800	01121	CB2735
A28R3	0683-1035		RESISTOR 10K 5% .25W FC TC=-400/+700	01121	CB1035
A28R4	0686-1345	1	RESISTOR 130K 5% .5W CC TC=0+882	01121	EB1345
A28R5	0757-0933	3	RESISTOR 2.4K 2% .125W F TC=0+-100	24546	C4-1/8-T0-2401-G
A28R6	0698-4471	1	RESISTOR 7.15K 1% .125W F TC=0+-100	24546	C4-1/8-T0-7151-F
A28R7	2100-2633	2	RESISTOR-TRMR 1K 10% C SIDE-ADJ 1-TURN	30983	ET50X102
A28R8	0683-1845	1	RESISTOR 180K 5% .25W FC TC=-800/+900	01121	CB1845
A28R9	0683-5125		RESISTOR 5.1K 5% .25W FC TC=-400/+700	01121	CB5125
A28R10	0683-5115		RESISTOR 510 5% .25W FC TC=-400/+600	01121	CB5115

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A28R11	0757-0900		RESISTOR 100 2% .125W F TC=0+ 100	24546	C4-1/8-T0-101-G
A28R12	0757-0900		RESISTOR 100 2% .125W F TC=0+ 100	24546	C4-1/8-T0-101-G
A28R13	0757-0924		RESISTOR 1K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-1001-G
A28R14	0757-0952		RESISTOR 15K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-1502-G
A28R15	0698-5841	1	RESISTOR 11 5% .25W FC TC=-400/+500	01121	CB1105
A28R16	0811-1672	1	RESISTOR 3.3 5% 2W PW TC=0+-400	75042	BWH2-3R3-J
A28TP1	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A28TP2	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A28U1	1826-0016	3	IC LM204H RGLTR	27014	LM204H
A29	05340-60025	1	REGULATOR ASSEMBLY, +15 V. (SERIES 1220A) (LOADED ON 05340-20025 BLANK BOARD)	28480	05340-60025
A29C1	0180-0116		CAPACITOR-FXD; 6.8UF+-10% 35VDC TA	56289	150D685X903582
A29C2	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X9020B2
A29C3	0150-0050	3	CAPACITOR-FXD 1000PF +80-20% 1000WVDC	28480	0150-0050
A29C4	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA SOLID	56289	150D106X9020B2
A29CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A29CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A29CR3	1902-3234		DIODE-ZNR 19.6V 5% DO-7 PD=.4W TC=+.073%	04713	SZ 10939-266
A29Q1	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A29Q2	1854-0420	1	TRANSISTOR NPN SI PD=40W FT=3MHZ	28480	1854-0420
FOR A29Q2	1205-0219		HEAT-DISSIPATOR SGL SHUNT PKG	28480	1205-0219
A29Q3	1854-0039		TRANSISTOR NPN 2N3053 SI TO-5 PD=1W	04713	2N3053
FOR A29Q3	1205-0033		HEAT-DISSIPATOR SGL TO-5/TO-39 PKG	28480	1205-0033
A29R1	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
A29R2	0683-6805	1	RESISTOR 68 5% .25W FC TC=-400/+500	01121	CB6805
A29R3	0757-0936		RESISTOR 3.3K 2% .125W F TC=0+-100	24546	C4-1/8-T0-3301-G
A29R4	0757-0943		RESISTOR 6.2K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6201-G
A29R5	2100-2633		RESISTOR-TRMR 1K 10% C SIDE-ADJ 1 TURN	30983	ET50X102
A29R6	0757-0123		RESISTOR 34.8K 1% .125W F TC=0+ 100	24546	C5-1/4-T0-3482-F
A29R7	0683-0335	2	RESISTOR 3.3 5% .25W FC TC=-400/+500	01121	CB33G5
A29R8	0757-0944		RESISTOR 6.8K 2% .125W F TC=0+-100	24546	C4-1/8-T0-6801-G
A29R9	0757-0280	3	RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A29R10	0683-0335		RESISTOR 3.3 5% .25W FC TC=-400/+500	01121	CB33G5
A29U1	1826-0010	3	IC REGULATOR	07263	723HM
A30	05340-60029	1	POWER SUPPLY MOTHER BOARD ASSEMBLY (SERIES 1220A) (LOADED ON 05340-20029 BLANK BOARD)	28480	05340-60029
A30C1	0180-2387	2	CAPACITOR-FXD; 2200UF+75-10% 30VDC AL	56289	602D222G030AA2A
A30C2	0180-2387		CAPACITOR-FXD; 2200UF+75-10% 30VDC AL	56289	602D222G030AA2A
A30C3	0180-2386	2	CAPACITOR-FXD; 2800UF+75-10% 20VDC AL	56289	602D282G020AA2A
A30C4	0180-2386		CAPACITOR-FXD; 2800UF+75-10% 20VDC AL	56289	602D282G020AA2A
A30C5	0180-2385	2	CAPACITOR-FXD; 4000UF+75-10% 15VDC AL	56289	602D402G015AA2A
A30C6	0180-2385		CAPACITOR-FXD; 4000UF+75-10% 15VDC AL	56289	602D402G015AA2A
A30CR1	1906-0027	3	DIODE-MULT FULL WAVE BRIDGE RECTIFIER	04713	MDA922-6
A30CR2	1906-0027		DIODE-MULT FULL WAVE BRIDGE RECTIFIER	04713	MDA922-6
A30CR3	1906-0027		DIODE-MULT FULL WAVE BRIDGE RECTIFIER	04713	MDA922-6
XA28	1251-1886	4	CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-340
XA29	1251-1886		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-340
XA31	1251-1886		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-340
XA32	1251-1886		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	252-15-30-340
A31	05340-60024	1	REGULATOR ASSEMBLY, -5 V. (SERIES 1220A) (LOADED ON 05340-20024 BLANK BOARD)	28480	05340-60024
A31C1	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA SOLID	56289	150D106X9020B2
A31C2	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X9020B2
A31C3	0180-0229	7	CAPACITOR-FXD; 33UF+-10% 10VDC TA-SOLID	56289	150D336X9010B2
A31C4	0160-2141		CAPACITOR-FXD 680PF +-20% 1000WVDC CER	28480	0160-2141
A31C5	0160-2141		CAPACITOR-FXD 680PF +-20% 1000WVDC CER	28480	0160-2141
A31C6	0180-0229		CAPACITOR-FXD; 33UF+-10% 10VDC TA-SOLID	56289	150D336X9010B2
A31C7	0180-0229		CAPACITOR-FXD; 33UF+-10% 10VDC TA-SOLID	56289	150D336X9010B2
A31CR1	1902-3149	1	DIODE-ZNR 9.09V 5% DO-7 PD=.4W TC=+.057%	04713	SZ 10939-170
A31Q1	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A31Q2	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A31Q3	1853-0254		TRANSISTOR PNP SI PD=30W FT=3MHZ	28480	1853-0254
FOR A31Q3	1205-0219		HEAT-DISSIPATOR SGL SHUNT PKG	28480	1205-0219
A31Q4	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A31Q5	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A31Q6	1853-0012	2	TRANSISTOR PNP 2N2904A SI TO-5 PD=600MW	01295	2N2904A
A31Q7	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A31Q8	1854-0039		TRANSISTOR NPN 2N3053 SI TO-5 PD=1W	04713	2N3053
FOR A31Q8	1205-0033		HEAT-DISSIPATOR SGL TO-5/TO-39 PKG	28480	1205-0033
A31R1	0757-0896	1	RESISTOR 68 2% .125W F TC=0+-100	24546	C4-1/8-TO-68R0-G
A31R2	2100-2574		RESISTOR-TRMR 500 10% C SIDE-ADJ 1-TURN	30983	ET50X501
A31R3	0683-1035		RESISTOR 10K 5% .25W FC TC=-400/+700	01121	CB1035
A31R4	0698-3150		RESISTOR 2.37K 1% .125W F TC=0+-100	16299	C4-1/8-TO-2371-F
A31R5	0757-0933		RESISTOR 2.4K 2% .125W F TC=0+-100	24546	C4-1/8-TO-2401-G
A31R6	0698-3150		RESISTOR 2.37K 1% .125W F TC=0+-100	16299	C4-1/8-TO-2371-F
A31R7	0757-0933		RESISTOR 2.4K 2% .125W F TC=0+-100	24546	C4-1/8-TO-2401-G
A31R8	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A31R9	2100-2574		RESISTOR-TRMR 500 10% C SIDE-ADJ 1-TURN	30983	ET50X501
A31R10	0683-5105		RESISTOR 51 5% .25W FC TC=-400/+500	01121	CB5105
A31R11	0757-0900		RESISTOR 100 2% .125W F TC=0+-100	24546	C4-1/8-TO-101-G
A31R12	0757-0900		RESISTOR 100 2% .125W F TC=0+-100	24546	C4-1/8-TO-101-G
A31R13	0757-0919	1	RESISTOR 620 2% .125W F TC=0+-100	24546	C4-1/8-TO-621-G
A31R14	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-TO-5101-G
A31R15	0757-0927		RESISTOR 1.3K 2% .125W F TC=0+-100	24546	C4-1/8-TO-1301-G
A31R16	0757-0941		RESISTOR 5.1K 2% .125W F TC=0+-100	24546	C4-1/8-TO-5101-G
A31R17	0811-1671	1	RESISTOR 2.7 5% 2W PW TC=0+-400	75042	BWH2-2R7-J
A31R18	0811-1732	1	RESISTOR 1 5% 3W PW TC=0+-50	56289	242E1R05
A31R19	0683-1025		RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A31R20	0683-1025		RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
A31TP1	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A31TP2	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A31TP3	0360-0124		TERMINAL-STUD SPCL PRESS MTG	28480	0360-0124
A31U1	1826-0016		IC LM204H RGLTR	27014	LM204H
A31U2	1826-0016		IC LM204H RGLTR	27014	LM204H
A32	05340-60023	1	REGULATOR ASSEMBLY, +5V. (SERIES 1220A) (LOADED ON 05340-20023 BLANK BOARD)	28480	05340-60023
A32C1	0180-0291		CAPACITOR-FXD; 1UF+-10% 35VDC TA SOLID	56289	150D105X9035A2
A32C2	0180-0374		CAPACITOR-FXD; 10UF+-10% 20VDC TA-SOLID	56289	150D106X902082
A32C3	0180-0229		CAPACITOR-FXD; 33UF+-10% 10VDC TA-SOLID	56289	150D336X901082
A32C4	0180-1746		CAPACITOR-FXD; 15UF+-10% 20VDC TA-SOLID	56289	150D156X902082
A32C5	0150-0050		CAPACITOR-FXD 1000PF +80-20% 1000WVDC	28480	0150-0050
A32C6	0150-0050		CAPACITOR-FXD 1000PF +80-20% 1000WVDC	28480	0150-0050
A32C7	0180-0229		CAPACITOR-FXD; 33UF+-10% 10VDC TA-SOLID	56289	150D336X901082
A32C8	0180-0229		CAPACITOR-FXD; 33UF+-10% 10VDC TA SOLID	56289	150D336X901082
A32C9	0180-0228		CAPACITOR-FXD; 22UF+-10% 15VDC TA SOLID	56289	150D226X9015B2
A32C10	0180-0229		CAPACITOR-FXD; 33UF+-10% 10VDC TA SOLID	56289	150D336X901082
A32CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A32CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A32CR3	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A32CR4	1902-3171	1	DIODE-ZNR 11V 5% DO-7 PD=.4W TC=+.062%	04713	SZ 10939-194
A32CR5	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A32CR6	1902-3139	1	DIODE-ZNR 8.25V 5% DO-7 PD=.4W TC=+.053%	04713	SZ 10939-158
A32Q1	1853-0020		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A32Q2	1854-0558	1	TRANSISTOR NPN SI DARL PD=70W FT=1MHZ	28480	1854-0558
A32Q3	1853-0012		TRANSISTOR PNP 2N2904A SI TO-5 PD=600MW	01295	2N2904A
A32Q4	1854-0071		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A32Q5	1854-0300	1	TRANSISTOR NPN SI PD=25W FT=4MHZ	28480	1854-0300
A32R1	0757-0906	1	RESISTOR 180 2% .125W F TC=0+-100	24546	C4-1/8-TO-181-G
A32R2	0683-1335	1	RESISTOR 13K 5% .25W FC TC=-400/+800	01121	CB1335
A32R3	2100-2413		RESISTOR-TRMR 200 10% C SIDE-ADJ 1-TURN	30983	ET50X201
A32R4	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-TO-2001-G
A32R5	0757-0922		RESISTOR 820 2% .125W F TC=0+-100	24546	C4-1/8-TO-821-G
A32R6	2100-2413		RESISTOR-TRMR 200 10% C SIDE ADJ 1-TURN	30983	ET50X201
A32R7	0757-0931		RESISTOR 2K 2% .125W F TC=0+-100	24546	C4-1/8-TO-2001-G
A32R8	0757-0922		RESISTOR 820 2% .125W F TC=0+-100	24546	C4-1/8-TO-821-G
A32R9	0757-0914	1	RESISTOR 390 2% .125W F TC=0+-100	24546	C4-1/8-TO-391-G
A32R10	0683-0685		RESISTOR 6.8 5% .25W FC TC=-400/+500	01121	CB68G5
A32R11	0757-0280		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1001-F
A32R12	0698-3158		RESISTOR 23.7K 1% .125W F TC=0+-100	16299	C4-1/8-TO-2372-F
A32R13	0811-1552	1	RESISTOR .56 5% 2W PW TC=0+-800	75042	BWH2-9/16-J
A32R14	0757-0936		RESISTOR 3.3K 2% .125W F TC=0+-100	24546	C4-1/8-TO-3301-G
A32R15	0812-0045	1	RESISTOR .15 5% 3W PW TC=0+-90	07088	KM-300
A32R16	0698-3158		RESISTOR 23.7K 1% .125W F TC=0+-100	16299	C4-1/8-TO-2372-F
A32R17	0811-1665	1	RESISTOR .82 5% 2W PW TC=0+-800	75042	BWH2-82/100-J
A32R18	0757-0280		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1001-F

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A32U1	1826-0010		IC REGULATOR	07263	723HM
A32U2	1826-0010		IC REGULATOR	07263	723HM
			A32 MISCELLANEOUS		
	05340-00020	1	HEAT DISSIPATOR	28480	05340-00020

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
		1	5340A CHASSIS PARTS		
B1	3160-0209	1	FAN-TBAX 45-CFM 115V 50/60-HZ 1.5-THK	28480	3160-0209
C1	0160-3043	1	CAPACITOR-FXD 5000PF/5000PF +-20%	28480	0160-3043
C2	0180-0228	1	CAPACITOR-FXD; 22UF+-10% 15VDC TA-SOLID	56289	150D226X9015R2
C3	0160-3036	5	CAPACITOR-FXD 5000PF +80-20% 200WVDC CER	28480	0160-3036
C4	0160-3036		CAPACITOR-FXD 5000PF +80-20% 200WVDC CER	28480	0160-3036
C5	0160-3036		CAPACITOR-FXD 5000PF +80-20% 200WVDC CER	28480	0160-3036
C6	0160-3036		CAPACITOR-FXD 5000PF +80-20% 200WVDC CER	28480	0160-3036
C7	0160-3036		CAPACITOR-FXD 5000PF +80-20% 200WVDC CER	28480	0160-3036
C8	0180-1743	1	CAPACITOR-FXD; .1UF+-10% 35VDC TA SOLID	56289	150D104X9035A2
CP1	5088-7003	1	POWER SPLITTER ASSEMBLY	28480	5088-7003
CR1	1906-0038	1	DIODE-MULT FULL WAVE BRIDGE RECTIFIER	28480	1906-0038
CR2	1901-0028	1	DIODE-PWR RECT 400V 750NA DO-29	04713	SR1358-9
E1	0340-0037	1	TERMINAL-STUD DBL TURRET PRESS MTG	28480	0340-0037
F1	2110-0002	1	FUSE 2A 250V 1.25X.25 UL IEC (FOR 115V OPERATION)	71400	AGC-2
F1	2110-0001	1	FUSE 1A 250V NORM-BLO 1.25X.25 UL IEC (FOR 230V OPERATION)	71400	AGC-1
J1			(PART OF W2, FRONT-PANEL N-CONNECTOR)		
J2			PART OF OPTION 002, SEE TABLE 6-4		
J3	1250-0083	3	CONNECTOR-RF BNC FEM SGL HOLE FR (REAR PANEL TIME BASE OUTPUT)	24931	28JR-130-1
J4	1250-0186	1	CONNECTOR-RF BNC FEM SGL HOLE FR (FRONT PANEL DIRECT COUNT INPUT)	90949	31-221-1024
J5	1250-0083		CONNECTOR-RF BNC FEM SGL HOLE FR (REAR PANEL OSC)	24931	28JR-130 1
J6	1251-2357	1	CONNECTOR-AC PWR HP-9 MALE FLG MTG	28480	1251-2357
J7	1250-0083		CONNECTOR-RF BNC FEM SGL HOLE FR (+5V, CHASSIS)	24931	28JR-130-1
J8			PART OF OPT 002, SEE TABLE 6-4 (REAR PANEL DIRECT COUNT INPUT)		
J9			PART OF OPT 003, SEE TABLE 6-5 (REAR PANEL DIGITAL INPUT/OUTPUT)		
L1	9140-0096	1	COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	15/101
L2	9100-2247	5	COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
L3	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
L4	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
L5	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
L6	9100-2247		COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/100
MP1	5000-0050	1	TRIM:SIDES	28480	5000-0050
MP2	05340-00014	1	COVER, LEFT SIDE	28480	05340-00014
MP3	05340-20068	1	FRAME, LEFT SIDE	28480	05340-20068
MP4	05340-00003	1	CHASSIS, MAIN	28480	05340-00003
MP5	05340-00010	1	COVER, TOP	28480	05340-00010
MP6	05340-00025	1	PANEL, REAR	28480	05340-00025
MP7	05340-20045	1	HEAT SINK, TRANSISTOR	28480	05340-20045
MP8	05340-00023	1	COVER, CONNECTOR	28480	05340-00023
MP9	05340-00011	1	COVER, BOTTOM	28480	05340-00011
MP10	05340-00013	1	INSULATOR, BOTTOM COVER	28480	05340-00013
MP11	5060-0767	5	FOOT ASSY:FM	28480	5060-0767
MP12	5060-0730	1	FRAME ASSY:3 X 16	28480	5060-0730
MP13	5000-8593	1	COVER, RIGHT SIDE	28480	5000-8593
MP14	1490-0030	1	WIREFORM .187-OD SST	28480	1490-0030
MP15	05340-00001	1	PANEL, FRONT	28480	05340-00001
MP16	05340-00005	1	WINDOW, DISPLAY	28480	05340-00005
MP17	05340-00004	1	TRIM, FRONT PANEL(STD INSTRUMENT)	28480	05340-00004
MP18			TRIM, FRONT PANEL(OPT 002,SEE TABLE 6-4)		
MP19	5040-0170	13	GUIDE:PLUG-IN PC BOARD	28480	5040-0170
MP20	05340-00008	1	COVER, HOUSING	28480	05340-00008
FOR MP20	0340-0486	2	INSULATOR-COVER TO- 3 .33-THK	0011J	A22-2003
MP21	05340-00019	1	COVER, HOUSING	28480	05340-00019
MP22	05340-20027	1	HOUSING	28480	05340-20027
Q1	1854-0063	2	TRANSISTOR NPN 2N3055 SI TO-3 PD=115W	28480	1854-0063
FOR Q1	1200-0043	2	INSULATOR-XSTR TO-3 .02-THK	76530	322047
FOR Q1	1200-0456	2	SOCKET-XSTR 2-CONT TO-3-PKG	28480	1200-0456
Q2	1854-0063		TRANSISTOR NPN 2N3055 SI TO-3 PD=115W	28480	1854-0063
FOR Q2	1200-0043		INSULATOR-XSTR TO-3 .02-THK	76530	322047
FOR Q2	1200-0456		SOCKET-XSTR 2-CONT TO-3-PKG	28480	1200-0456

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
R1 SAMPLE RATE	2100-3171	1	RESISTOR-VAR W/SW 1M 30% 10CW SPST-NC (SAMPLE RATE)	28480	2100-3171
FOR R1	0370-1099	1	KNOB-BASE PTR .5 IN JGK SGI-DECAL	28480	0370-1099
R2	0683-1025	1	RESISTOR 1K 5% .25W FC TC=-400/+500	01121	CB1025
R3	0683-2725	1	RESISTOR 2.7K 5% .25W FC TC= 400/+700	01121	CB2725
R4			PART OF OPT 002, SEE TABLE 6-4.		
S1	3101-1694	1	SWITCH-TGL SUBMIN DPDT NS 2A 250VAC (AC ON/OFF)	09353	U318-PHI
S2	3101-1216	1	SWITCH-PB SPST NO MOM .25A (RESET)	28480	3101-1216
S3			PART OF R1		
S4	3100-2935	1	SWITCH:ROTARY, LEVER (RANGE)	28480	3100-2935
FOR S4	0370-0432	1	KNOB:LEVER,OLIVE BLACK,OPT X95	28480	0370-0432
S5 (INT-EXT)	3101-0070	1	SWITCH-SL DPDT-NS MINTR .5A 125VAC/DC	79727	GF-126-0000
S6 (115V-230V)	3101-1272	1	SWITCH-SL 4PDT-NS STD 1.5A 250VAC SLDR	28480	3101-1272
S7			PART OF OPT 003, SEE TABLE 6-5.		
S8			PART OF OPT 003, SEE TABLE 6-5.		
S9			PART OF OPT 003, SEE TABLE 6-5.		
S10			PART OF OPT 003, SEE TABLE 6-5.		
S11			PART OF OPT 003, SEE TABLE 6-5.		
S12			PART OF OPT 003, SEE TABLE 6-5.		
T1	9100-3019	1	TRANSFORMER:POWER	28480	9100-3019
T2			PART OF OPT 001, SEE TABLE 6-3		
TH1	3103-0022	1	SWITCH:FXD THERMAL	28480	3103-0022
W1	05505-60019	1	CABLE, AC LINE	28480	05505-60019
W2	05340-60028	1	CABLE ASSEMBLY, 18 GHZ INPUT	28480	05340-60028
W3	05340-60033	1	CABLE ASSEMBLY, SAMPLER #1	28480	05340-60033
W4	05340-60034	1	CABLE ASSEMBLY, A3 OUTPUT	28480	05340-60034
W5	05340-60013	1	CABLE ASSEMBLY, SAMPLER #2	28480	05340-60013
W6	05340-60035	1	CABLE ASSEMBLY, A1 OUTPUT	28480	05340-60035
W7	05340-60044	1	CABLE ASSEMBLY, VCO 1/A1A2	28480	05340-60044
W8	8120-1378		CABLE ASSEMBLY, AC POWER CORD	28480	8120-1378
W9	05340-60048	1	CABLE ASSEMBLY, A2 OUTPUT	28480	05340-60048
W10	05340-60049	1	CABLE ASSEMBLY, A2FL1 INPUT	28480	05340-60049
W11	05340-60050	1	CABLE ASSEMBLY, DIRECT COUNT OUTPUT	28480	05340-60050
W12	05340-60051	1	CABLE ASSEMBLY, 10 MHZ DOUBLER	28480	05340-60051
W13	05340-60052	1	CABLE ASSEMBLY, VCO 1/A22	28480	05340-60052
W14	05340-60053	1	CABLE ASSEMBLY, VCO 2/A2A2	28480	05340-60053
W15	05340-60054	1	CABLE ASSEMBLY, HARM FREQ. A14/A20	28480	05340-60054
W16	05340-60065	1	CABLE ASSEMBLY, CHASSIS	28480	05340-60065
W17			PART OF OPT. 002, SEE TABLE 6-4.		
W18			PART OF OPT. 002, SEE TABLE 6-4.		
W19			PART OF OPT. 003, SEE TABLE 6-5.		
W20			PART OF OPT. 003, SEE TABLE 6-5.		
W21			PART OF OPT. 003, SEE TABLE 6-5.		
XA1			NOT ASSIGNED		
XA2			NOT ASSIGNED		
XA3			NOT ASSIGNED		
XA4			PART OF A16 (SEE LISTING FOR)		
XA5			PART OF A16 (SEE LISTING FOR)		
XA6			PART OF A16 (SEE LISTING FOR)		
XA7			PART OF A16 (SEE LISTING FOR)		
XA8			PART OF A16 (SEE LISTING FOR)		
XA9			PART OF A16 (SEE LISTING FOR)		
XA10			PART OF A16 (SEE LISTING FOR)		
XA11			PART OF A16 (SEE LISTING FOR)		
XA12			PART OF A16 (SEE LISTING FOR)		
XA13			PART OF A16 (SEE LISTING FOR)		
XA14			PART OF A16 (SEE LISTING FOR)		
XA15			PART OF A16 (SEE LISTING FOR)		
XA16			NOT ASSIGNED		
XA17	1251-0160	1	CONNECTOR-PC EDGE 15-CONT/ROW 1-ROW	71785	250-15-30-210
XA18	1251-0159		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	251-15-30-261
XA19A	1251-0159	3	CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	251-15-30-261
XA19B	1251-0159		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	71785	251-15-30-261
XA20	1251-0233	5	CONNECTOR-PC EDGE 22-CONT/ROW 2-ROWS	71785	251-22-30-261
XA21	1251-0233		CONNECTOR-PC EDGE 22-CONT/ROW 2 ROWS	71785	251-22-30-261
XA22	1251-0233		CONNECTOR-PC EDGE 22-CONT/ROW 2-ROWS	71785	251-22-30-261
XA23	1251-0233		CONNECTOR-PC EDGE 22-CONT/ROW 2-ROWS	71785	251-22-30-261
XA24	1251-0233		CONNECTOR-PC EDGE 22-CONT/ROW 2-ROWS	71785	251-22-30-261

See introduction to this section for ordering information

Table 6-1. Replaceable Parts, 5340A Standard Instruments

Reference Designation		HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
XA25				NOT ASSIGNED		
XA26				NOT ASSIGNED		
XA27				NOT ASSIGNED		
XA28				PART OF A3C (SEE LISTING FOR)		
XA29				PART OF A30 (SEE LISTING FOR)		
XA30				NOT ASSIGNED		
XA31				PART OF A30 (SEE LISTING FOR)		
XA32				PART OF A30 (SEE LISTING FOR)		
XA33		1251-0198	1	CONNECTOR-PC EDGE 6-CONT/ROW 2-ROWS	71785	251-06-30-261
XA34				NOT ASSIGNED		
XF1		1400-0084	1	FUSEHOLDER-EXTR POST 15A 250V UL	28480	1400-0084
				MISCELLANEOUS PARTS		
		0340-C039	1	TERMINAL BUSHING - TEFLON: MOUNTS IN	28480	0340-0039
		0380-0310	2	STANDOFF-RVT-ON .75LG 6-32THD .250D BRS	00866	1921B
		0380-0974	4	STANDOFF-RND .438LG .115ID .188OD BRS NI	06540	9212-B115
		0590-0765	1	NUT-KNURLED R 1/4-40-THD .078-THK	95146	MODEL N-1A
		1400-0776	1	CABLE TIE .19-IN-WD NYL	06383	SST 4
		00692-210	1	PIN, KEY	28480	00692-210
		05340-20041	1	SPACER BOARD	28480	05340-20041
		05340-00016	1	STRIP, GROUND	28480	05340-00016
		08731-210	1	NUT, LOCK, RF CONNECTOR	28480	08731-210
		6960-0046	1	PLUG-HOLE FL-HD .688-DIA BRS	57771	D-3047-B
		6960-0002	1	PLUG-HOLE FL-HD .5-DIA STL	57771	D-2733-LCS
		05340-00027	1	SHIELD, SWITCH	28480	05340-00027
		05340-00028	1	BRACKET, CAPACITOR MOUNT	28480	05340-00028
		05340-00029	1	BRACKET, CHASSIS	28480	05340-00029
		8120-1378	2	CABLE ASSY 3-COND 18-AWG (AC POWER CORD)	28480	8120-1378
				RACK MOUNT KIT		
		05326-60046	1	KIT, RACK MOUNT CONSISTING OF ITEMS A THRU E	28480	05326-60046
RACK MOUNT KIT	ITEM A	2370-0012	3	SCREW-MACH 6-32 .25-IN-LG 100 DEG FL-HD	28480	2370-0012
	ITEM B	2510-0047	4	SCREW-MACH 8-32 .438-IN-LG PAN-HD	28480	2510-0047
	ITEM C	5020-7619	1	BRACKET, LEFT MOUNTING	28480	5020-7619
	ITEM D	5020-7620	1	BRACKET, RIGHT MOUNTING	28480	5020-7620
	ITEM E	05326-40003	1	STRIP, FILLER	28480	05326-40003

Figure 6-1. 5340A Mechanical Parts

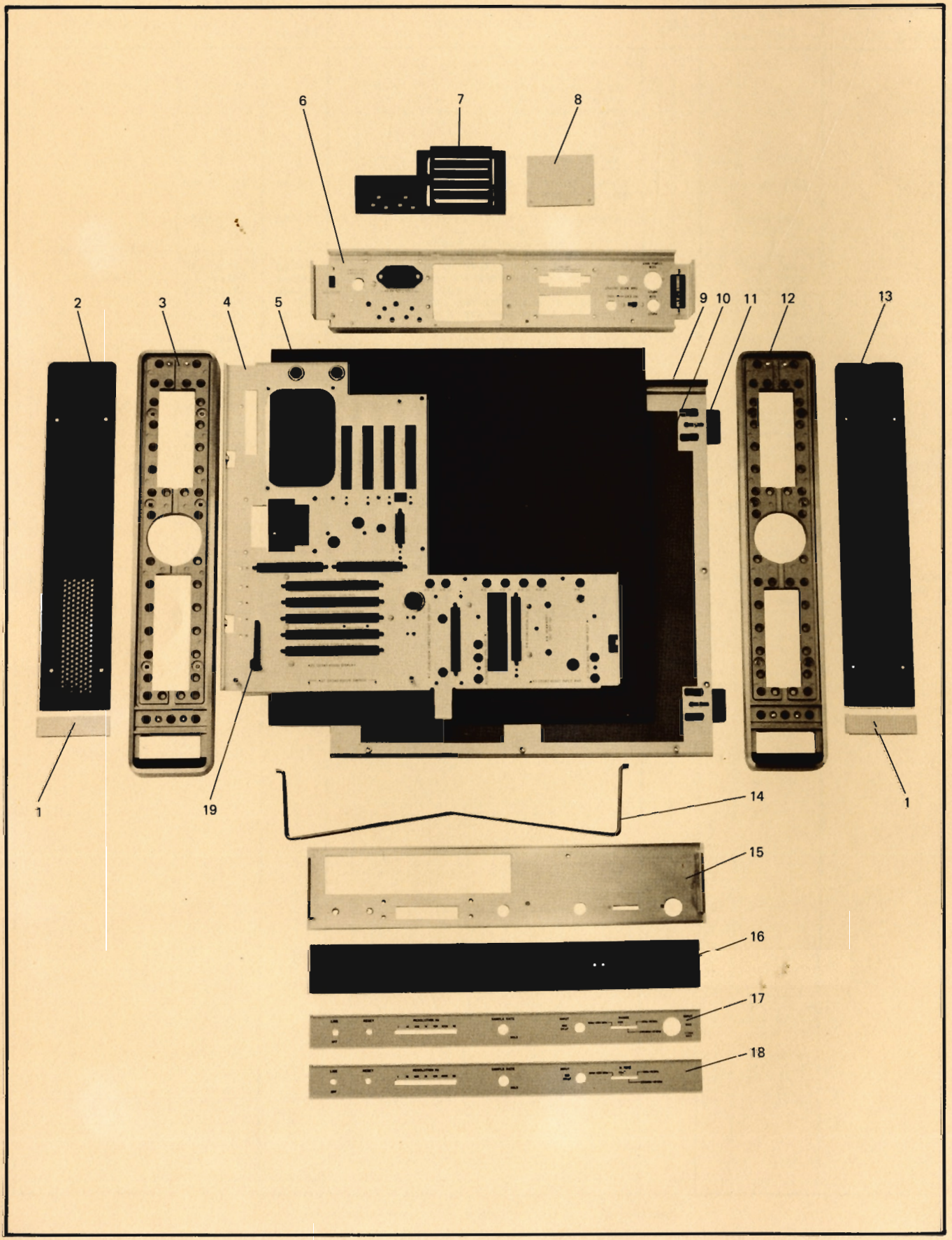


Table 6-2. 5340A Mechanical Parts

MP Number	Description	Qty. Used	HP Part Number
1	Plate, Fluted Aluminum	2	5000-0050
2	Cover, Left Side	1	05340-00014
3 (Note A)	Frame, Left Side	1	05340-20068
4	Chassis, Main	1	05340-00003
5	Cover, Top	1	05340-00010
6	Panel, Rear	1	05340-00025
7	Heat Sink, Transistor	1	05340-20045
8	Cover, Connector	1	05340-0023
9	Cover, Bottom	1	05340-00011
10	Insulator, Bottom Cover	1	05340-00013
11	Foot Assy, Full Module	5	5060-0767
12 (Note A)	Frame, Right Side	1	5060-0730
13	Cover, Right Side	1	5000-8593
14	Tilt Stand	1	1490-0030
15	Panel, Front	1	05340-00001
16	Window, Display	1	05340-00005
17	Trim, Front Panel	1	05340-00004
18	Trim, Front Panel	1 (Opt. 002)	05340-00024
19	Guide, PC Board	13	5040-0170

Note A: The left sideframe MP3 is machined for additional airflow clearance. Note the difference with MP12.

VI

Table 6-3. Replaceable Parts, Option 001

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
			OPTION 001, HIGH STABILITY OSCILLATOR DELETE A18 (05340-60036). ADD THE FOLLOWING PARTS:		
A18	10544A	1	OSCILLATOR ASSEMBLY NOT RECOMMENDED FOR FIELD REPAIR, FOR REPLACEMENT OR REPAIR ORDER	28480	10544A
	10544-60511	1	REBUILT 10544A PART NO. 10544-60511	28480	10544-60511
A33	05340-60080	1	OPTIONAL OSCILLATOR POWER SUPPLY (SERIES 1236A) (LOADED ON 05340-20080 BLANK BOARD)	28480	05340-60080
A33C1	0180-2373	2	CAPACITOR-FXD; 580UF+150-10% 35VDC AL	28480	0180-2373
A33C2	0180-2373		CAPACITOR-FXD; 580UF+150-10% 35VDC AL	28480	0180-2373
A33C3	0180-0230	1	CAPACITOR-FXD; 1UF+-20% 50VDC TA-SOLID	56289	150D105X0050A2
A33C4	0180-1746	1	CAPACITOR-FXD; 15UF+-10% 20VDC TA-SOLID	56289	150D156X9020B2
A33C5	0150-0050	1	CAPACITOR-FXD 1000PF +80-20% 1000WVDC	28480	0150-0050
A33C6	0150-0073	1	CAPACITOR-FXD 100PF +-10% 1000WVDC CER	56256	C0280102F101KS27-CDH
A33C7	0180-0116	1	CAPACITOR-FXD; 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A33CR1	1906-0027	1	DIODE ASSEMBLY, BRIDGE	04713	MDA922-6
A33CR2			NOT ASSIGNED		
A33CR3			NOT ASSIGNED		
A33CR4			NOT ASSIGNED		
A33CR5	1901-3182	1		28480	1901-3182
A33Q1	1854-0071	1	TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A33R1*	0683-7515	1	RESISTOR 750 5% .25W FC TC=-400/+600 *FACTORY SELECTED PART	01121	CB7515
A33R2	0757-0317	1	RESISTOR 1.33K 1% .125W F TC=0+ 100	24546	C4-1/8-T0-1331-F
A33R3	0757-0940	1	RESISTOR 4.7K 2% .125W F TC=0+-100	24546	C4-1/8-T0-4701-G
A33R4	0757-0950	1	RESISTOR 12K 2% .125W F TC=0+ 100	24546	C4-1/8-T0-1202-G
A33R5	0757-0416	1	RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A33R6	0683-1205	1	RESISTOR 12 5% .25W FC TC=-400/+500	01121	CB1205
A33R7	0757-1094	1	RESISTOR 1.47K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1471-F
A33R8	2100-2633	1	RESISTOR-TRMR 1K 10% C SIDE-ADJ 1-TURN	30983	ET50X102
A33R9	0757-0279	1	RESISTOR 3.16K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3161-F
A33T1 *			NOT ASSIGNED		
A33T2	9100-3049	1	TRANSFORMER, POWER	28480	9100-3049
A33U1	1826-0010	1	IC REGULATOR	07263	723HM
	1205-0033	1	HEAT-DISSIPATOR SGL TO-5/TO-39 PKG	28480	1205-0033
			MISCELLANEOUS		
	05340-20044	2	SPACER, OSCILLATOR	28480	05340-20044
	2360-0115	2	SCREW-MACH 6-32 .312-IN-LG PAN-HD	28480	2360-0115
	3050-0066	2	WASHER-FL MTLC NO. 6 .147 IN ID .375 IN	28480	3050-0066
	2420-0001	2	NUT-HEX-W/LKWR 6-32-THD .109-THK	28480	2420-0001

Table 6-4. Replaceable Parts, Option 002

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
			OPTION 002. REAR PANEL CONNECTORS. DELETE MP17 FRONT PANEL TRIM (05340-00004) AND W2 INPUT CABLE ASSY (05340-60028). ADD THE FOLLOWING PARTS:		
J2			PART OF W18		
FOR J2	00692-210	2	PIN, KEY	28480	00692-210
J8	1250-0102	1	CONNECTOR-RF BNC FEM SGL HOLE FR	28480	1250-0102
MP18	05340-00024	1	TRIM, FRONT PANEL	28480	05340-00024
R4	11593A	1	TERMINATION, 50 OHM	28480	11593A
W17	05260-6034	1	CABLE ASSEMBLY, LOW FREQUENCY INPUT	28480	05260-6034
W18	05340-60060	1	RIGID COAX CABLE, 18 GHZ	28480	05340-60060
		1		28480	08731-201

Table 6-5. Replaceable Parts, Option 011

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
			OPTION 011. REMOTE PROGRAMMING AND DIGITAL OUTPUT, DELETE MP8 COVER CONN. (05340-00023) AND A19 INTERFACE A ASSY, (05340-60031). ADD THE FOLLOWING PARTS:		
A19	05340-60032	1	INTERFACE "B" ASSEMBLY (SERIES 1236A) (LOADED ON 05340-20032 BLANK BOARD)	28480	05340-60032
A19C1	0180-0106	3	CAPACITOR-FXD; 60UF+-20% 6VDC TA SOLID	56289	150D606X000682
A19C2	0160-3879	4	CAPACITOR-FXD .01UF + 20% 100WVDC CER	28480	0160-3879
A19C3	0160-3879		CAPACITOR-FXD .01UF + 20% 100WVDC CER	28480	0160-3879
A19C4	0160-3879		CAPACITOR-FXD .01UF +-20% 100WVDC CER	28480	0160-3879
A19C5	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA SOLID	56289	150D606X000682
A19C6	0180-0374	1	CAPACITOR-FXD; 10UF+-10% 20VDC TA SOLID	56289	150D106X902082
A19CR1	1901-0040	5	DIODE-SWITCHING 30V 50NA 2NS DO 35	28480	1901-0040
A19L1	9100-2247	1	COIL-FXD MOLDED RF CHOKE .1UH 10%	24226	10/109
A19L2	9140-0158	1	COIL-FXD MOLDED RF CHOKE 1UH 10%	24226	10/101
A19Q1	1854-0560	1	TRANSISTOR NPN SI DARL PD=310MW	04713	SPS6740
A19R1	1810-0041	5	NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0041
A19R2	1810-0041		NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0041
A19R3	1810-0041		NETWORK-RES 9-PIN-SIP .15 PIN-SPCG	28480	1810-0041
A19R4	0698-8354	2	RESISTOR 270 5% .125W CC TC=0+-850	01121	BB2715
A19R5	0698-8354		RESISTOR 270 5% .125W CC TC=0+-850	01121	BB2715
A19R6	0675-1021	2	RESISTOR 1K 10% .125W CC TC=0+882	01121	BB1021
A19R7	0675-1021		RESISTOR 1K 10% .125W CC TC=0+882	01121	BB1021
A19R8	0698-5180	2	RESISTOR 2K 5% .125W CC TC=0+882	01121	BB2025
A19R9	0698-5180		RESISTOR 2K 5% .125W CC TC=0+882	01121	BB2025
A19R10	0698-3113	1	RESISTOR 100 5% .125W CC TC=0+588	01121	BB1015
A19R11	0698-6984	1	RESISTOR 470 5% .125W CC TC=0+882	01121	BB4715
A19R12	1810-0041		NETWORK-RES 9-PIN-SIP .15-PIN-SPCG	28480	1810-0041
A19U1	1820-0054	5	IC:SN7400N	01295	SN7400N
A19U2	1820-1056	3	IC SN74 132 N COUNTER	01295	SN74132N
A19U3	1820-0716	1	IC SN74 161 N COUNTER	01295	SN74161N
A19U4	1820-0587	1	IC DM74L 10N GATE	27014	DM74L10N
A19U5	1820-0710	2	IC MUXR	07263	93L22DC
A19U6	1820-0710		IC MUXR	07263	93L22DC
A19U7	1816-0185	1	IC:DIGITAL	28480	1816-0185
A19U8	1820-0077	1	IC:TTL DUAL D FLIP/FLOP	01295	SN7474N
A19U9	1820-0782	1	IC SN74 27 N GATE	01295	SN7427N
A19U10	1820-0174	2	IC:TTL HEX INVERTER	01295	SN7404N
A19U11	1820-0839	4	IC SN74 175 N FLIP-FLOP	01295	SN74175N
A19U12	1820-0765	1	IC SN74 197 N COUNTER	01295	SN74197N
A19U13	1820-0583	1	IC DM74L 00N GATE	27014	DM74L00N
A19U14	1820-0054		IC:SN7400N	01295	SN7400N
A19U15	1820-0706	2	IC COMPTR	07263	9324DC
A19U16	1820-0054		IC:SN7400N	01295	SN7400N
A19U17	1820-0616	2	IC MUXR	07263	9322DC
A19U18	1820-0839		IC SN74 175 N FLIP-FLOP	01295	SN74175N
A19U19	1820-0839		IC SN74 175 N FLIP-FLOP	01295	SN74175N
A19U20	1820-0174		IC:TTL HEX INVERTER	01295	SN7404N
A19U21	1820-0706		IC COMPTR	07263	9324DC
A19U22	1820-0596	1	IC DM74L 74N FLIP-FLOP	27014	DM74L74N
A19U23	1820-0616		IC MUXR	07263	9322DC
A19U24	1820-0839		IC SN74 175 N FLIP-FLOP	01295	SN74175N
A19U25	1816-0184	1	IC MEMORY	28480	1816-0184
A19U26	1820-0328	1	IC:TTL QUAD 2-INPT NOR GATE	12955	N7402N
A19Z1	9100-1788	2	COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/4B
A34	05340-60067	1	BUS COMMUNICATOR ASSEMBLY (SERIES 1252) (LOADED ON 05340-20067 BLANK BOARD)	28480	05340-60067
A34C1	0160-0162	1	CAPACITOR-FXD .022UF +-10% 200WVDC POLYE	56289	292P22392
A34C2	0160-0157	3	CAPACITOR-FXD 4700PF +-10% 200WVDC POLYE	56289	292P47292
A34C3	0160-0157		CAPACITOR-FXD 4700PF +-10% 200WVDC POLYE	56289	292P47292
A34C4	0180-0106		CAPACITOR-FXD; 60UF+-20% 6VDC TA SOLID	56289	150D606X000682
A34C5	0160-3879		CAPACITOR-FXD .01UF + 20% 100WVDC CER	28480	0160-3879
A34C6	0160-0157		CAPACITOR-FXD 4700PF +-10% 200WVDC POLYE	56289	292P47292

Table 6-5. Replaceable Parts, Option 011

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A34CR1	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO 35	28480	1901-0040
A34CR2	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A34CR3	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO 35	28480	1901-0040
A34CR4	1901-0040		DIODE-SWITCHING 30V 50NA 2NS DO-35	28480	1901-0040
A34J1	1251-1626	1	CONNECTOR-PC EDGE 12-CONT/ROW 2-ROWS	71785	252-12-30-300
A34R1	0757-0902	4	RESISTOR 120 2% .125W F TC=0+-100	24546	C4-1/8-T0-121-G
A34R2	1810-0136	2	NETWORK-RES 10-PIN-SIP .1-PIN SPCG	28480	1810-0136
A34R3	1810-0136		NETWORK-RES 10-PIN-SIP .1-PIN-SPCG	28480	1810-0136
A34R4	0757-0902		RESISTOR 120 2% .125W F TC=0+-100	24546	C4-1/8-T0-121-G
A34R5	0757-0902		RESISTOR 120 2% .125W F TC=0+-100	24546	C4-1/8-T0-121-G
A34R6	1810-0041		NETWORK-RES 9-PIN-SIP .15-PIN SPCG	28480	1810-0041
A34R7			NOT ASSIGNED		
A34R8	0757-0902		RESISTOR 120 2% .125W F TC=0+-100	24546	C4-1/8-T0-121-G
A34U1	1820-1056		IC SN74 132 N COUNTER	01295	SN74132N
A34U2	1820-0621	3	IC SN74 38 N BUFFER	01295	SN7438N
A34U3	1820-0621		IC SN74 38 N BUFFER	01295	SN7438N
A34U4	1820-0054		IC:SN7400N	01295	SN7400N
A34U5	1820-0588	1	IC DM74L 20N GATE	27014	DM74L20N
A34U6	1820-0065	2	IC:TTL DUAL J-K FLIP FLOP	01295	SN7470N
A34U7	1820-0065		IC:TTL DUAL J-K FLIP FLOP	01295	SN7470N
A34U8	1820-1053	2	IC SN74 14 N SCHMITT	01295	SN7414N
A34U9	1820-1053		IC SN74 14 N SCHMITT	01295	SN7414N
A34U10	1820-0621		IC SN74 38 N BUFFER	01295	SN7438N
A34U11	1820-0054		IC:SN7400N	01295	SN7400N
A34U12	1820-0586	1	IC DM74L 04N INV	27014	DM74L04N
A34U13	1820-1056		IC SN74 132 N COUNTER	01295	SN74132N
A34U14	1820-0904	1	IC COMPTR	07263	93L24DC
A34U15	1820-0589	1	IC DM74L 30N GATE	27014	DM74L30N
A34XU1	1200-0475	1	CONNECTOR;1-CONT SKT .016 DIA	22526	75060-005
A34Z1	9100-1788		COIL; FXD; NON-MOLDED RF CHOKE; .75UH	02114	VK200-20/48
A35	05340-60068	1	CONNECTOR ASSEMBLY	28480	05340-60068
A35A1			CONNECTOR-BOARD SUBASSEMBLY CONSISTING OF A35J1 AND INTERCONNECTING BOARD FOR REPLACEMENT ORDER BY DESCRIPTION (05340-20066 AND 1251-3283 ASSEMBLED.		
A35MP1	0380-1036	2	SPACER-HEX .255LG 6-32THD .312A/F STL NI	28480	0380-1036
A35MP2	2190-0017	2	WASHER-LK HLCL NO. 8 .168 IN ID .31 IN	28480	2190-0017
A35MP3	05340-00022	1	PLATE, CONNECTOR	28480	05340-00022
A35S1	3101-1787	5	SWITCH-SL DPDT-NS SUBMIN .5A 125VAC/DC	28480	3101-1787
A35S2	3101-1787		SWITCH-SL DPDT-NS SUBMIN .5A 125VAC/DC	28480	3101-1787
A35S3	3101-1787		SWITCH-SL DPDT-NS SUBMIN .5A 125VAC/DC	28480	3101-1787
A35S4	3101-1787		SWITCH-SL DPDT-NS SUBMIN .5A 125VAC/DC	28480	3101-1787
A35S5	3101-1787		SWITCH-SL DPDT-NS SUBMIN .5A 125VAC/DC	28480	3101-1787
A35S6	3101-1788	1	SWITCH-SL DPST-NS SUBMIN .5A 125VAC/DC	28480	3101-1788
			OPTION 003 CHASSIS PARTS		
W19	8120-0520	2	CABLE ASSY 14-COND 26-AWG	28480	8120-0520
W20	8120-0520		CABLE ASSY 14-COND 26-AWG	28480	8120-0520
W21	8120-1833	1	CABLE ASSY 24-COND 24-AWG	28480	8120-1833

Table 6-6. Manufacturers Code List

MFR NO.	MANUFACTURER NAME	ADDRESS	ZIP CODE
GB027	NO M/F DESCRIPTION FOR THIS MFG NUMBER		
0011J	JERMYN INDUSTRIES		
0086S	STETTNER-TRUSH INC	CAZENOVIA NY	13035
00866	GOE ENGINEERING CO INC	CITY OF INDUSTRY CA	91746
01121	ALLEN BRADLEY CO	MILWAUKEE WI	53212
01295	TEXAS INSTR INC SEMICOND CMPNT DIV	DALLAS TX	75231
02114	FERROXCUBE CORP	SAUGERTIES NY	12477
02735	RCA CORP SOLID STATE DIV	SOMMERVILLE NJ	08876
03888	PYROFILM CORP	WHIPPANY NJ	07981
04713	MOTOROLA SEMICONDUCTOR PRODUCTS	PHOENIX AZ	85008
06383	PANDUIT CORP	TINLEY PARK IL	60477
06540	AMATOM ELEK HARDWARE DIV OF MITE	NEW ROCHELLE NY	10802
06560	AIRCO SPEER ELEK DIV AIR RDCN CO	NOGALES AZ	85621
07088	KELVIN ELECTRIC CO	VAN NUYS CA	91401
07263	FAIRCHILD SEMICONDUCTOR DIV	MOUNTAIN VIEW CA	94040
09353	C AND K COMPONENTS INC	WATERTOWN MA	02172
1295S	NO M/F DESCRIPTION FOR THIS MFG NUMBER		
16299	CORNING GL WK ELEC CMPNT DIV	RALEIGH NC	27604
17856	SILICONIX INC	SANTA CLARA CA	95050
19701	MEPCO/ELECTRA CORP	MINERAL WELLS TX	76067
22526	BERG ELECTRONIC INC	CUMBERLAND PA	17070
24226	GOWANDA ELECTRONICS CORP	GOWANDA NY	14070
24546	CORNING GLASS WORKS (BRADFORD)	BRADFORD PA	16701
24931	SPECIALTY CONNECTOR CO INC	INDIANAPOLIS IN	46227
27014	NATIONAL SEMICONDUCTOR CORP	SANTA CLARA CA	95051
28480	HEWLETT-PACKARD CO CORPORATE HQ	PALO ALTO CA	94304
30983	MEPCO/ELECTRA CORP	SAN DIEGO CA	92121
32997	BOURNS INC TRIMPOT PROD DIV	RIVERSIDE CA	92507
56256	NO M/F DESCRIPTION FOR THIS MFG NUMBER		
56289	SPRAGUE ELECTRIC CO	NORTH ADAMS MA	01247
57771	STIMPSON EDWIN B CO INC	BROOKLYN NY	11205
71400	BUSSMAN MFG DIV OF MCGRAW-EDISON CO	ST LOUIS MO	63017
71785	TRW ELEK COMPONENTS CINCH DIV	ELK GROVE VILLAGE IL	60007
72136	ELECTRO MOTIVE MFG CO INC	WILLIMANTIC CT	06226
74276	SIGNALITE INC	NEPTUNE NJ	07753
75042	TRW INC PHILADELPHIA DIV	PHILADELPHIA PA	19108
76493	BELL INDUSTRIES INC MILLER JW DIV	COMPTON CA	90224
76530	TRW ELEK CMPNT CINCH-MONADNOCK DIV	CITY OF INDUSTRY CA	91747
79727	C-W INDUSTRIES	WARMINSTER PA	18974
83781	NATIONAL ELECTRONICS INC	GENEVA IL	60134
9D949	AMPHENOL SALES DIV OF BUNKER-RAMO	HAZELWOOD MO	63042
95146	ALCO ELECTRONIC PRODUCTS INC	LAWRENCE MA	01843

VI

SECTION VII

MANUAL CHANGES AND OPTIONS

7-1. INTRODUCTION

7-2. This section contains information necessary to adapt this manual to older instruments. Also included is information for available options. Options are covered starting with paragraph 7-9. Field installation of options are covered in paragraph 7-19. Refer to Section II for ASCII remote programming information.

7-3. MANUAL CHANGES

7-4. This manual applies directly to Model 5340A with serial prefix 1532A. See paragraph 1-4 for serail number identification.

7-5. Newer Instruments

7-6. As changes are made, newer instruments may have serial prefixes that are not listed in this manual. The manual for these instruments are supplied with a manual change sheet which contains the required updating information. If this sheet is missing, contact the nearest Hewlett-Packard Sales and Service Office listed at the back of this manual.

7-7. Older Instruments

7-8. To adapt this manual to instruments having serial prefixes below 1532A, refer to Table 7-1 for backdating that applies to your instrument serial prefix.

Table 7-1. Manual Backdating

If Your Instrument Has Serial Prefix	Make the Following Changes to Your Manual
1440A	1
1416A	1,2
1408A	1,2,3
1348A	1,2,3,4
1344A	1,2,3,4,5
1328A	1,2,3,4,5,6
1324A	1,2,3,4,5,6,7
1320A	1,2,3,4,5,6,7,8
1312A	1,2,3,4,5,6,7,8,9
1252A	1,2,3,4,5,6,7,8,9,10
1248A	1,2,3,4,5,6,7,8,9,10,11
1244A	1,2,3,4,5,6,7,8,9,10,11,12
1236A	1,2,3,4,5,6,7,8,9,10,11,12,13

CHANGE 1

Table 6-1, A2A4 Replaceable Parts:
Change series number for 05340-60040 (A2A4) from 1532 to 1344A.
Change A2A4C20 and A2A4C22 to 0160-0363 C:FXD MICA 620PF 5%, 28480, 0160-0363.
Change A2A4C21 to 0160-2202 C:FXD MICA 75PF 5%, 28480, 0160-2202.
Change A2A4L8 and A2A4L10 to 9100-2244 COIL:FXD RF 0.1UH 10%, 28480, 9100-2247.
Change A2A4L9 to 9140-0158 1UH 10%, 99800, 1025-20.

Table 6-1, A2 Parts List:
Delete C8 and description.

Table 6-1, A4 Replaceable Parts:
Change series number for 05340-60002 (A4) to 1220A.
Change A4R22 to 0757-0932 R:FXD MET FLM 2.2K OHM 2% 1/8W, 28480, 0757-0932 (Note that some A4 boards with series 1220A may have 1800 ohm resistors installed).

Table 6-1, A14 Replaceable Parts:
Change series number for 05340-60011 (A14) to Series 1236A.
Change A14R1 and A14R2 to 0757-0893 R:FXD FLM 51 OHM 2% 1/8W, 28480, 0757-0893.

Page 8-13, Figure 8-8, A2 Schematic Diagram:
Change A2A4C20 and A2A4C22 to 620PF.
Change A2A4C21 to 74PF.
Change A2A4L8 and A2A4L10 to 0.1UH.
Change A2A4L9 to 1UH.
Change series number at top of schematic for A2A4 to Series 1220A.
Delete C8.

Page 8-17, Figure 8-10, A4 Schematic Diagram:
Change A4R22 to 2200 OHMS.
Change series number at top of schematic to Series 1220A.

Page 8-37, Figure 8-20, A14 Schematic Diagram:
Change A14R1 and A14R2 to 51 OHMS.
Change series number at top of schematic to Series 1236A.

CHANGE 2

Page 6-6, A2A3 Parts List:
Change A2A3R1 to 0757-0963 R:FXD FLM 43K OHM, 2%, 1/8W, 28480, 0757-0963.

Page 8-13, Figure 8-8:
Change A2A3R1 to 43K.

Page 6-32, A33 Parts List:
Change A33CR1 to 1901-0027, Diode:Silicon 0.75A 400PIV, 04713, SR1358-9.
Add A33CR2, CR3, CR4; 1901-0027, Diode:Silicon 0.75A 400PIV, 04713, SR1358-9.
Change part number of T2 to 9100-3021.

Page 8-77, Figure 8-35, A33 Power Supply:
Replace schematic and component locator with Figure 7-9 and 7-10.

CHANGE 3

Table 6-1, A17 Replaceable Parts:
Change A17A1C1 and C2 to 0180-0228, Capacitor; FXD 22 UF ±10% 15VDC TA-SOLID, 56289, 150D226X9015B2.
Change A17A1C5 through C7, C11, C12 to 0180-0197, Capacitor; FXD 2.2 UF +-10% 20VDC TA, 56289, 150D225X9020A2.
Change A17A1L3 to 9140-0158, Coil, FXD, Molded RF Choke, 1 UH 10%, 24226, 10/101.
Change A17A1R1 to 0698-5426, Resistor 10K 10%, .125W CC Tubular, 01121, BB1031.
Change A17A1R14 to 0698-5996, Resistor 560 OHM 5% .125W CC Tubular, 01121, BB5615.
Add A17A1E1, E3, 9170-0029, Core Magnetic, Shielding Bead, .138OD .047, 02114, 56-590-65A2/4A.
Change A17A1 board series number to Series 1320A.

Figure 8-23, A17 Schematic Diagram:
Change A17A1C1 and C2 to 22 UFD.
Add A17A1C21 2.2 PF from U5B pin 11 to ground.
Change A17A1R1 to 10K ohms.
Change A17A1R14 to 560 ohms.
Delete C22 and C23.
Change A17A1 board series number to 1320A.

VII

CHANGE 4

Table 6-1, A13 Replaceable Parts:
Change A13 board series number to 1220A.
Delete A13R39 and description.
Change A13R3 to 0757-0824 R:FXD FLM 56 ohm 2% 1/8W 28480 0757-0894.

Figure 8-19, A13 Schematic Diagram:
Change A13R3 to 56 ohms.
Delete A13R39, connect C4 directly to U1A pin 1.

CHANGE 5

Table 6-1, Replaceable Parts:
Change A3CR5 and CR6 to 1901-0535, Diode:Hybrid Hot Carrier, 28480, 1901-0535.
Change A20C3 to 0140-0209 C:FXD Mica 5 pfd 5%, 500VDCW, 28480, 0140-0209.

Figure 8-27, A20 Schematic Diagram:
Change A20C3 to 5 pfd.

CHANGE 6

Table 6-1, Replaceable Parts:
Delete listing for A1A5 (05340-6007) Filter Assy and all associated parts (A1A5A1, etc.).
Delete listing for A2A5 (05340-60078) Filter Assy and all associated parts (A2A5A1, etc.).

Figure 8-7, A1 Schematic Diagram:
Delete A1A5 and A1A5A1 from schematic. Show + and -5 volt lines connected directly to A1A2.

Figure 8-8, A2 Schematic Diagram:
Delete A2A5 and A2A5A1 from schematic. Show + and -5 volt lines connected directly to A2A2.

Table 6-1, A6 Replaceable Parts:
Change A6 series number 1236A.
Change A6R13 to 0757-0938 R:FXD FLM 3.9K ohm 2% 1/8W, 28480, 0757-0938.
Change A6R15 to 0757-0946 R:FXD FLM 8.2K ohm 2% 1/8W, 28480, 0757-0946.
Change A6R26 to 0698-8128 R:FXD COMP 220 ohm 5% 1/8W, 01121, BB2215.
Change A6R27 to 0698-5075 R:FXD COMP 130 ohm 5% 1/8W, 28480, 0698-5075.

Figure 8-12, A6 Schematic Diagram:
Change A6R13 to 3900 ohms, A6R15 to 5600 ohms, A6R26 to 220 ohms, and A6R27 to 130 ohms.

Table 6-1, A2 Replaceable Parts:
Change A2A4C3 to 0160-2150, C:FXD MICA 33 PF 5%, 28480, 0160-2150.
Change A2A4R4 to 0757-0180, R:FXD MET FLM 31.6 ohm 1% 1/8W, 28480,0757-0180.
Change A2A4 board series number to 1220A.

CHANGE 7

Table 6-1, A10 (05340-60008) Parts List
Change Series No. to 1252A
Change A10R8 to 0698-4433 R:FXD 2260 OHM 1% 1/8W, 28480, 0698-4433
Delete A10R25 and description

Table 6-1, A22 (05340-60016) Parts List
Change Series No. to 1236A
Change A22Q13 to Q16 to 1854-0009
Change A22R36 to R39 to 0683-6215 620 ohms
Change A22R30 to to 0683-3305 R:FXD COMP 330 OHM 5% 1/4W, 01121, CB33056
Change A22Q17 to 1854-0092
Delete A22Q21, A22R54, and A22R55 and their descriptions
Change A22U9 to 5088-7001

Figures 8-16 and 8-18 A10 and A12 (05340-60008) schematics:
Change A10R8 to 2260 ohms.
Change A10R25 200 ohm potentiometer (L2, C5, and R8 are tied together).

Figure 8-29, A22 Schematic Diagram:
Change series no. to 1236A
Change A22R30 to 33 ohms
Change A22R36 to R39 to 2700 ohms
Replace component locator with Figure 7-1
Delete A22Q21, A22R54, and R55

CHANGE 8

Table 6-1, A10 Replaceable Parts:
Change A10C3 to 0160-2671, C:FXD MYLAR 0.1μF 5% 80VDCW, 56289, 192P1045R8-PTS
Change A10L3 to 9100-2278, COIL:FXD MOLDED 150 μH 10%, 82142, 09-A151K

Change A10R1 to 0698-3151 R:FXD MET FLM 2.87K OHM 1% 1/8W, 28480, 0698-3151
Change A10R6 to 0698-3449, R:FXD MET FLM 28.7K OHM 1% 1/8W, 28480, 0698-3449

Figures 8-16 and 8-18, A10 and A12 Schematics:
Change A10C3 to 0.1 μF
Change A10L3 to 150 μH
Change A10R1 to 2870 OHMS
Change A10R6 to 28.7K OHMS

CHANGE 9

Table 6-1, A17 Replaceable Parts:
Add A17A1C17, 0180-0197, C:FXD ELECT 2.2 μF 10% 20VDCW, 56289, 150D225X9020A2-DYS
Add A17A1C21, 0160-2327, C:FXD .001 μF
Add Terminal Post 0360-0474 (2 each)
Add A17A1R6, 8, 9, 0698-3378 R:FXD 51 OHM 1/8W, 28480, 0698-3378
Add A17A1R5, 0698-5177 R:FXD 820 OHM 1/8W, 28480, 0698-5177
Add A17A1R19, 0757-0404 R:FXD FLM 130 OHM 1% 1/8W, 28480, 0757-0404
Add A17A1U4, 1820-0753 IC:TTL DIGITAL, 28480, 1820-0753
Change A17A1R10 to 0683-4715, R:FXD COMP 200 OHM 5% 1/4W, 01121, CB4715
Change A17A1R13 to 0698-3378, R:FXD COMP 100 OHM 1/8W, 28480, 0698-3378
Change A17A1R14 to 0674-3315, R:FXD COMP 330 OHM 5% 1/8W, 28480, 0674-3315
Delete A17A1E1,2,3, 9170-0029 Bead:Ferrite
Delete A17A1R23 and description
Delete A17A1C21 and description

Figure 8-23, A17A1 Schematic and Component Locator:
Replace schematic diagram with Figure 7-2 (A17A1 schematic series 1220A). Replace component locator with Figure 7-3.

CHANGE 10

Page 5-2, Table 5-1:
Change A20 part number to 05340-60018

Table 6-1, A20 assembly:
Replace parts list with Table 7-2.

Figure 8-27, A20 Schematic Diagram:
Replace schematic diagram with Figure 7-4. Replace component locator with Figure 7-5.

Figure 8-6, 5340A Block Diagram:
Change part number of A20 to 05340-60018.

Table 6-1, A22 Parts List
Change part number of A22Q13 thru Q16 to "1854-0009".
Change part number of A22R36 thru R39 to "0683-6215, 620 ohms.

Table 6-1, Chassis Parts:
Delete C3 through C7
Delete L2 thru L6

Figure 8-23, A17 Schematic Diagram:
Delete C3 thru C6 and L2 thru L5.

Figure 7-2, A17 Schematic Diagram:
Add A17A1C21 0.001 μF, connected from junction of A17A1R19 and C17 to ground.

Table 6-1, A17 Parts List:
Change A17A1C21 0160-2327, C:FXD CER 0.001 μF 20% 100VDCW

Page 4-47, Paragraph 4-229:
Change A20 part number to 05340-60018

CHANGE 11

a. Replace A10 schematic diagram (Figure 8-16) with Figure 7-6 (series 1220A). Replace A12 schematic diagram (Figure 8-18) with Figure 7-7 (series 1220A). Replace A10 and A12 component locators with Figure 7-8.

b. In Table 6-1, change parts lists for A10 as follows:

Change series 1252A to 1220A.

Change A10C4 to "0180-0291 C:FXD ELECT 1.0 UF 10% 35VDCW, Mfr Code 56289, Mfr part number 150D105X9035A2-DYS."

Add "A10CR3 1901-0040 DIODE:SILICON 50MA 30WV, Mfr code 07263, Mfr part number FDG1088."

Change A10CR4 and A10CR5 to "0122-0057 C:VAR 20PF/.4V, Mfr code 28480, Mfr part number 0122-0057." Add "Note: A10CR4, A10CR5, A12CR4, and A12CR5 are a matched set. If any one diode is replaced all four diodes must be replaced."

Change A10L4 to "9100-2266 COIL/INDUCTOR: FXD 8.2UF 10%, Mfr code 82142, Mfr part number 09-1316-2K."

Change A10R2 to "0698-3443 R:FXD MET FLM 287 OHM 1% 1/8W, Mfr code 28480, Mfr part number 0698-3443."

Change A10R5 to "0698-3158 R:FXD MET FLM 23.7K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0698-3158."

Change A10R7 to "0698-3151 R:FXD MET FLM 2.87K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0698-3151."

Change A10R8 to "0698-0084 R:FXD MET FLM 2.15K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0698-0084."

Change A10R9 to "0698-3157 R:FXD MET FLM 19.6K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0698-3157."

Add "A10R10 0757-0443 R:FXD MET FLM 11.0K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0757-0443."

Add "A10R11 0757-0439 R:FXD MET FLM 6.81K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0757-0439."

Change A10R24 to "0757-0283 R:FXD MET FLM 2.00K OHM 1% 1/8W, Mfr code 28480, Mfr part number 0757-0283."

CHANGE 12

a. On Figure 8-34 and 8-35, change F1 to "2.5 amp slow-blow 115V operation." For instruments with serial prefix 1244A, 2.5 amp fuses were installed, for replacement see Table 6-1.

b. In Table 6-1, change F1 to "2110-0015 FUSE:CARTRIDGE 2.5 AMP 125 V MAX SLOW-BLOW."

Change part number of MP6 to "05340-00002."
Change part number of MP7 to "05340-20028."

c. On Figure 8-22, delete pin W and connecting wire to XA19B. This wire was added to accommodate future changes.

d. On Figure 2-2 and Figure 3-4, change item 1 (10 MHz OUTPUT) to "TIME BASE OUTPUT." Change item 3 (10 MHz INPUT) to "OSC" only.

CHANGE 13

This instrument configurations for series 1244A and series 1236A are identical.

VII

Table 7-1. A20 Time Base Board Assy (Series 1236A), Replaceable Parts

A20	05340-60018	1	TIME BASE BOARD ASSY (SERIES 1236A) (LOADED ON 05340-20018 BLANK BOARD)	28480	05340-60018
A20C1	0180-0106		C:FXD ELECT 60 UF 20% 6VDCW	28480	0180-0106
A20C2	0160-3879		C:FXD CER 0.01 UF 20% 100VDCW	72982	8121-8112-X7R-103M
A20C3	0140-0209	1	C:FXD MICA 5.0 PF 10%	28480	0140-0209
A20R1	0683-2725		R:FXD COMP 2700 OHM 5% 1/4W	01121	CB 2725
A20R2	0683-2725		R:FXD COMP 2700 OHM 5% 1/4W	01121	CB 2725
A20R3	0683-2725		R:FXD COMP 2700 OHM 5% 1/4W	01121	CB 2725
A20U1	1820-0055	6	IC:TTL DECADE COUNTER 10 MHZ MIN.	01295	SN7490N
A20U2	1820-0615	1	IC:TTL 8-INPT MULTIPLEXER W/COM.ENABLE	04713	FAIR 9312
A20U3	1820-0099	3	IC:TTL 4-BIT BINARY COUNTER	01295	SN7493N
A20U4	1820-0054		IC:TTL QUAD 2-INPT NAND GATE	01295	SN7400N
A20U5	1820-0069	3	IC:TTL DUAL 4-INPT POS NAND GATE	01295	SN7420N
A20U6	1820-0716		IC:TTL SYNC PRESET 4-BIT BINARY COUNTER	01295	SN74161N
A20U7	1820-0716		IC:TTL SYNC PRESET 4-BIT BINARY COUNTER	01295	SN74161N
A20U8	1820-0055		IC:TTL DECADE COUNTER 10 MHZ MIN.	01295	SN7490N
A20U9	1820-0055		IC:TTL DECADE COUNTER 10 MHZ MIN.	01295	SN7490N
A20U10	1820-0077	7	IC:TTL DUAL D F/F	01295	SN7474N
A20U11	1820-0077		IC:TTL DUAL D F/F	01295	SN7474N
A20U12	1820-0099		IC:TTL 4-BIT BINARY COUNTER	01295	SN7493N
A20U13	1820-0174		IC:TTL HEX INVERTER	01295	SN7404N
A20U14	1820-0174		IC:TTL HEX INVERTER	01295	SN7404N
A20U15	1820-0055		IC:TTL DECADE COUNTER 10 MHZ MIN.	01295	SN7490N
A20U16	1820-0055		IC:TTL DECADE COUNTER 10 MHZ MIN.	01295	SN7490N
A20U17	1820-0077		IC:TTL DUAL D F/F	01295	SN7474N
A20U18	1820-0054		IC:TTL QUAD 2-INPT NAND GATE	01295	SN7400N
A20U19	1820-0904	4	IC:TTL LP 5-BIT COMPARATOR	07263	U7B93L2459X
A20U20	1820-0904		IC:TTL LP 5-BIT COMPARATOR	07263	U7B93L2459X
A20U21	1820-0099		IC: TTL 4-BIT BINARY COUNTER	01295	SN7493N
A20U22	1820-0055		IC: TTL DECADE COUNTER 10 MHZ MIN.	01295	SN7490N
A20U23	1820-0751	2	IC: TTL PRESETTABLE DECADE COUNTER (50 MHZ)	01295	SN74196N
A20U24	1820-0261 or 1820-1096 (preferred part)	1	IC: TTL MONO-STABLE MULTIVIBRATOR	01295 01295	SN74121N SN5419
A20U25	1820-0904		IC: TTL LP 5-BIT COMPARATOR	07263	U7B93L2459X
A20U26	1820-0904		IC: TTL LP 5-BIT COMPARATOR	07263	U7B93L2459X
A20U27	1820-0214		IC: TTL BCD TO DEC. DECODER	01295	SN7442N
A20Z1	9100-1788		COIL: CHOKE	02114	VK200-10/4B

Figure 7-1. A2 Component Locator Series 1236A

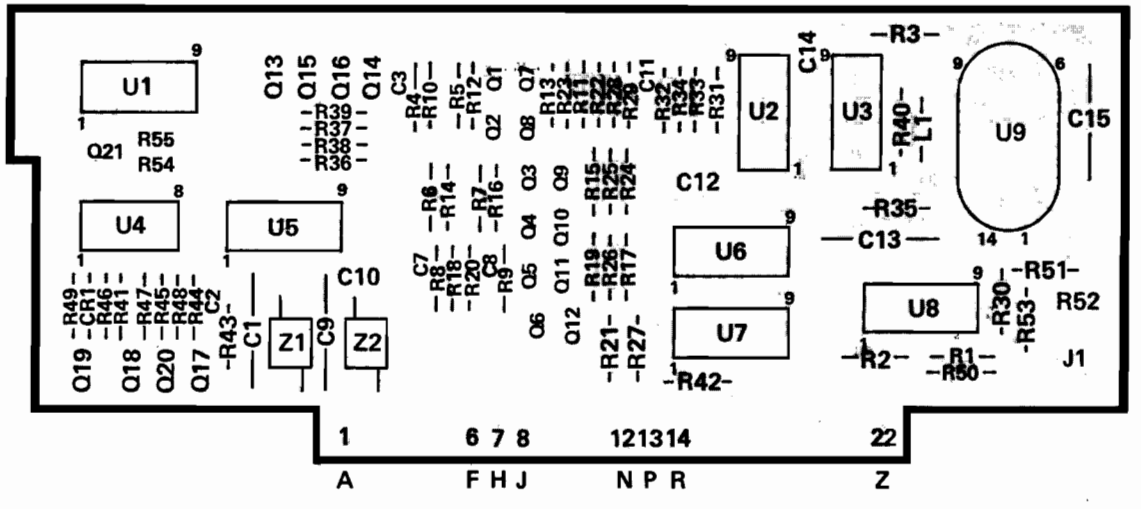


Figure 7-2. A17 Direct Count Amplifier Assembly (Series 1220A)

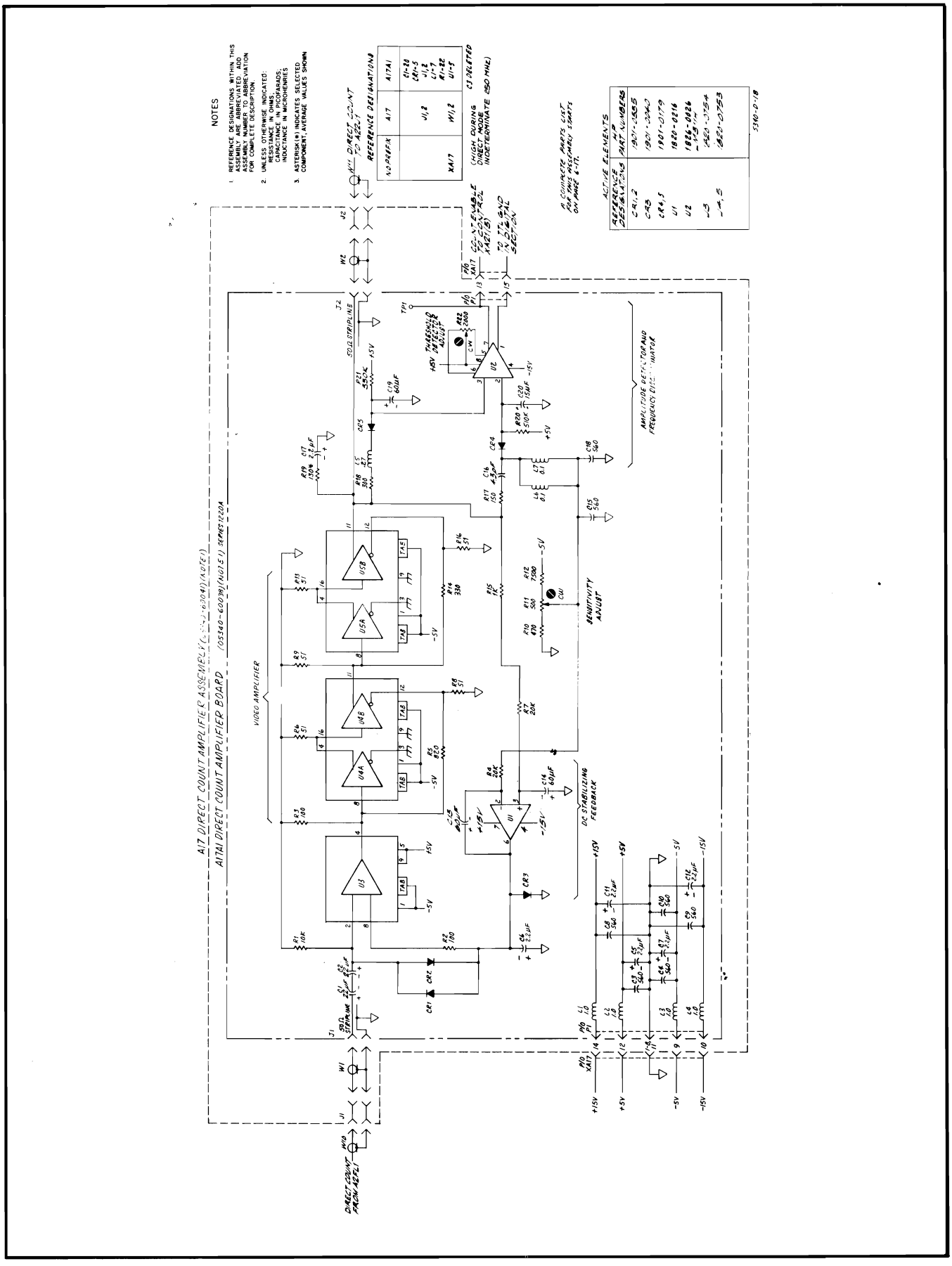


Figure 7-3. A17A1 Direct Count Amplifier Assembly (Series 1220A)

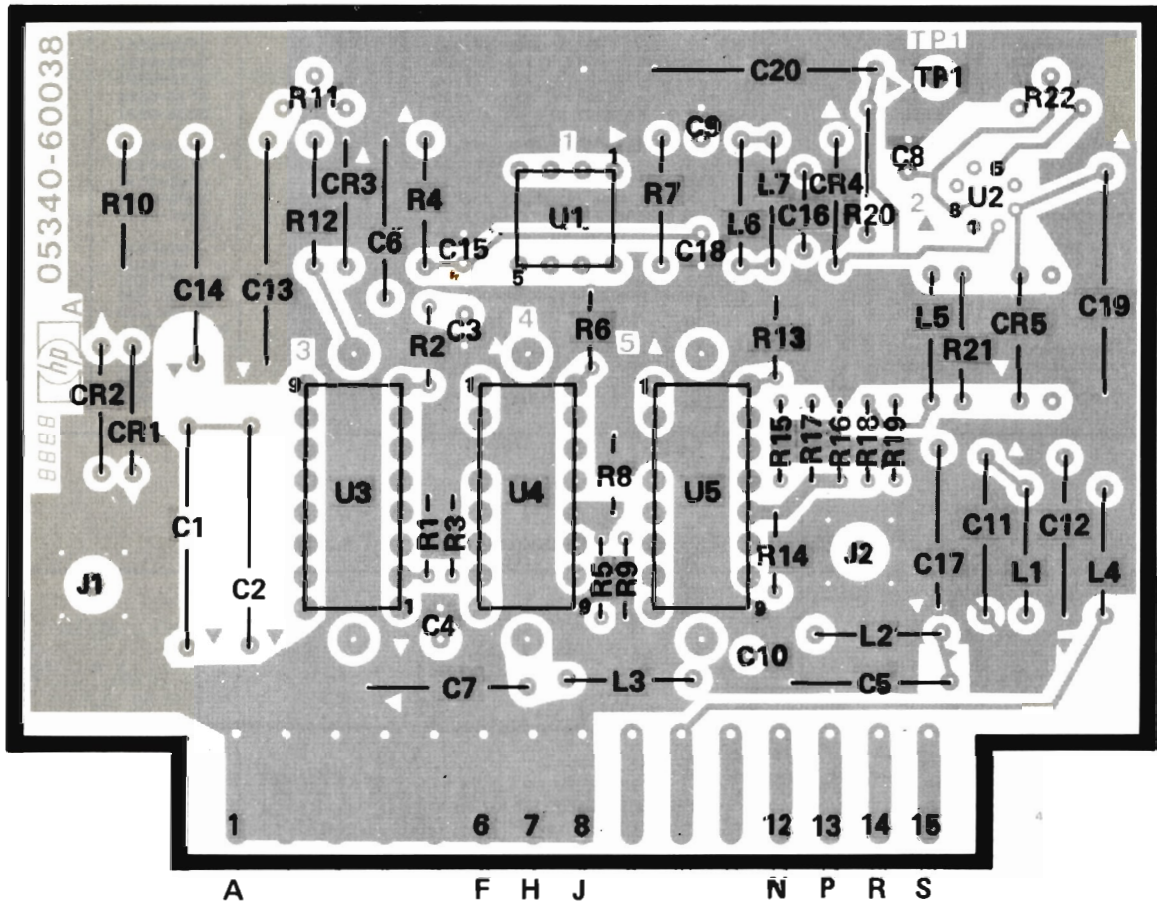


Figure 7-4. A20 Time Base Assembly

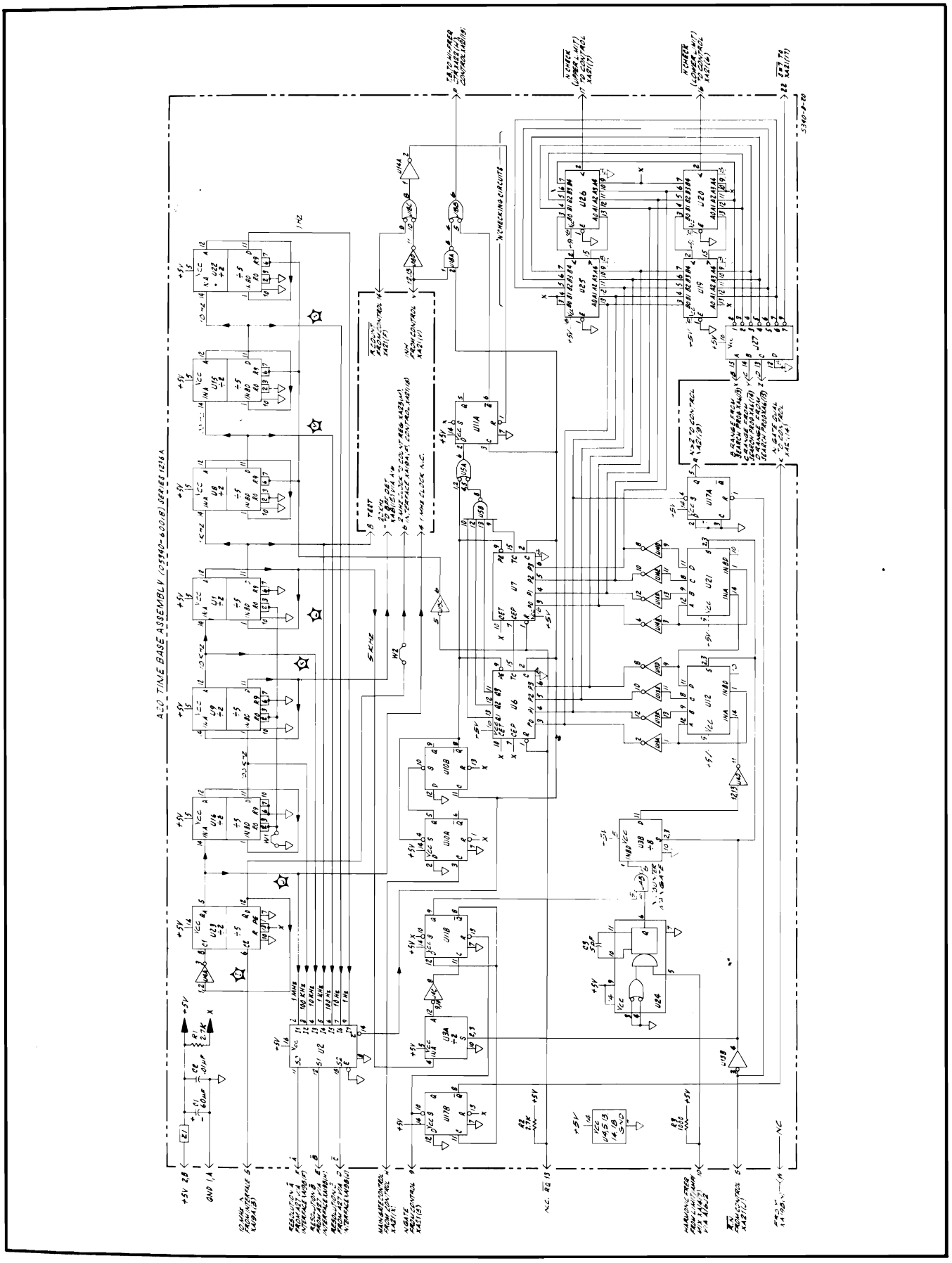
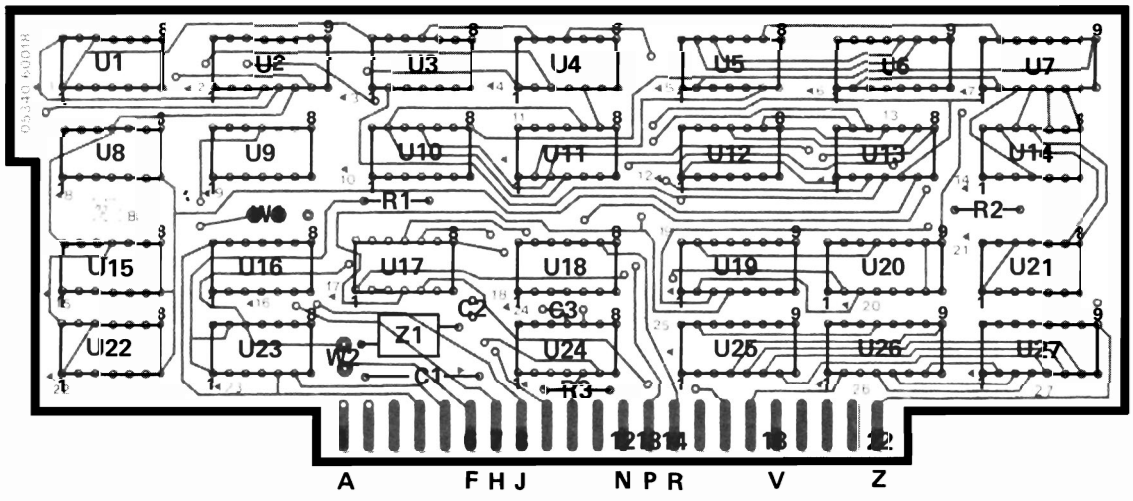


Figure 7-5. A20 Component Locator (Series 1236A)



ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
U1, 8, 9, 15 16, 22	1820-0055 SN7490N
U2	1820-0615 9312
U3, 12, 21	1820-0099 SN7493N
U4, 18	1820-0054 SN7400N
U5	1820-0069 SN7420N
U6, 7	1820-0716 SN7416IN
U10, 11, 17	1820-0077 SN7474N
U13, 14	1820-0174 SN7404N
U19, 20, 25, 26	1820-0904 93L24
U23	1820-0751 SN74196N
U24	1820-0261 SN7412IN
U27	1820-0214 SN7442N

5340-0-19

NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

A20
C1-3 R1-3 U1-27 Z1

A COMPLETE PARTS LIST FOR THIS ASSEMBLY STARTS ON PAGE 6-19.

Figure 7-6. A10 VCO No. 2 Assembly (Series 1220A), Schematic Diagram

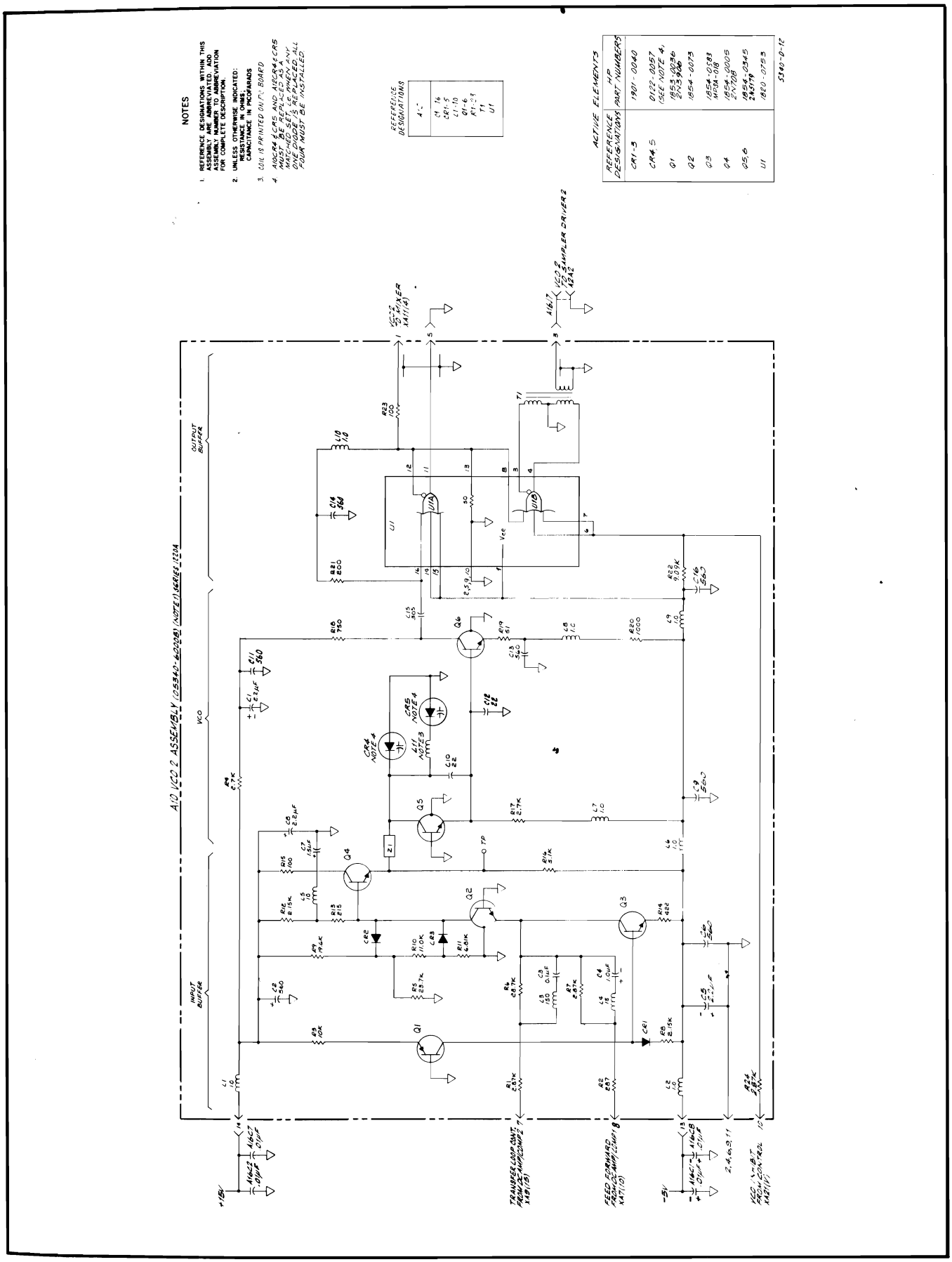


Figure 7-7. A12 VCO No. 1 Assembly (Series 1220A), Schematic Diagram

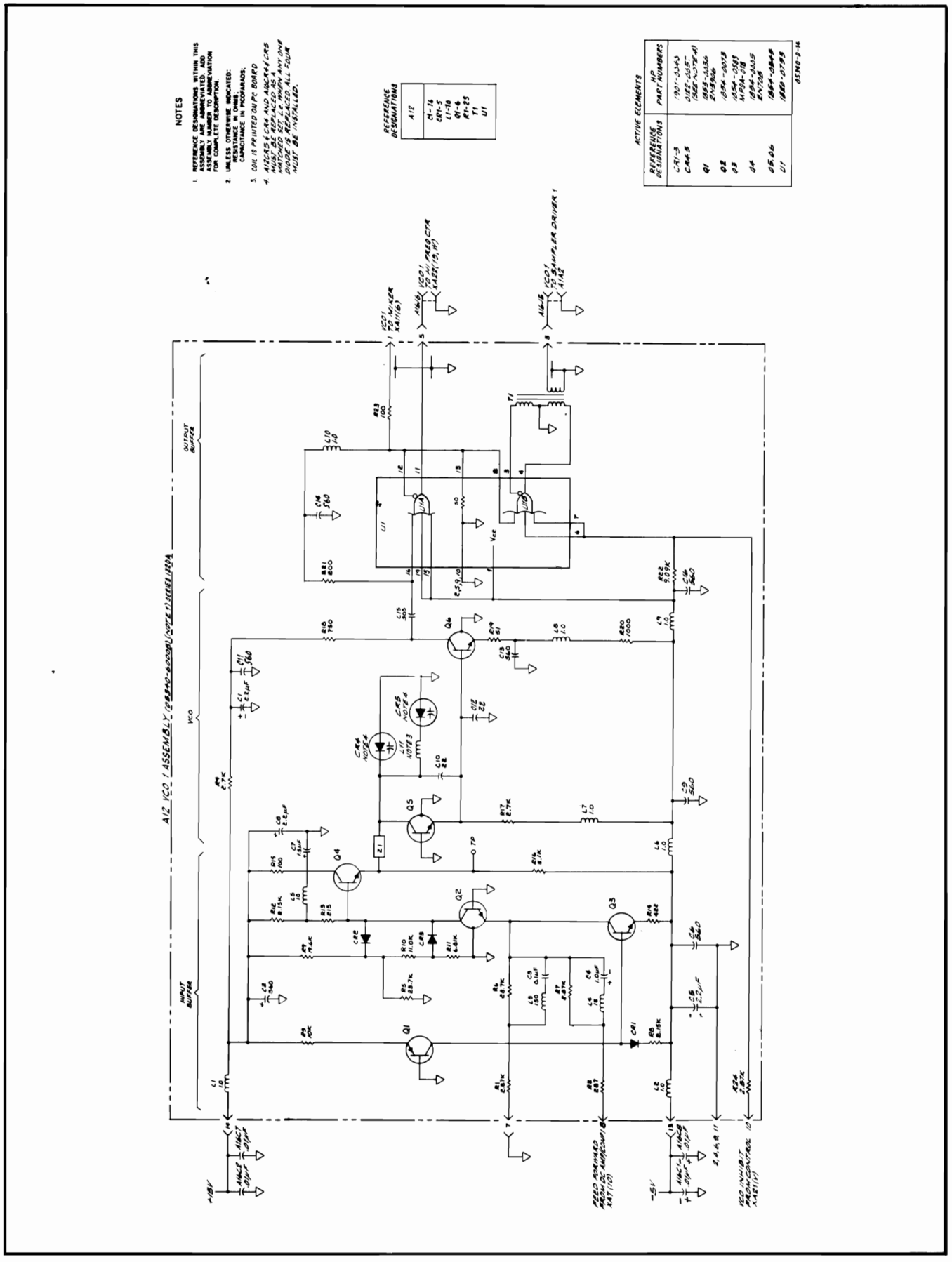
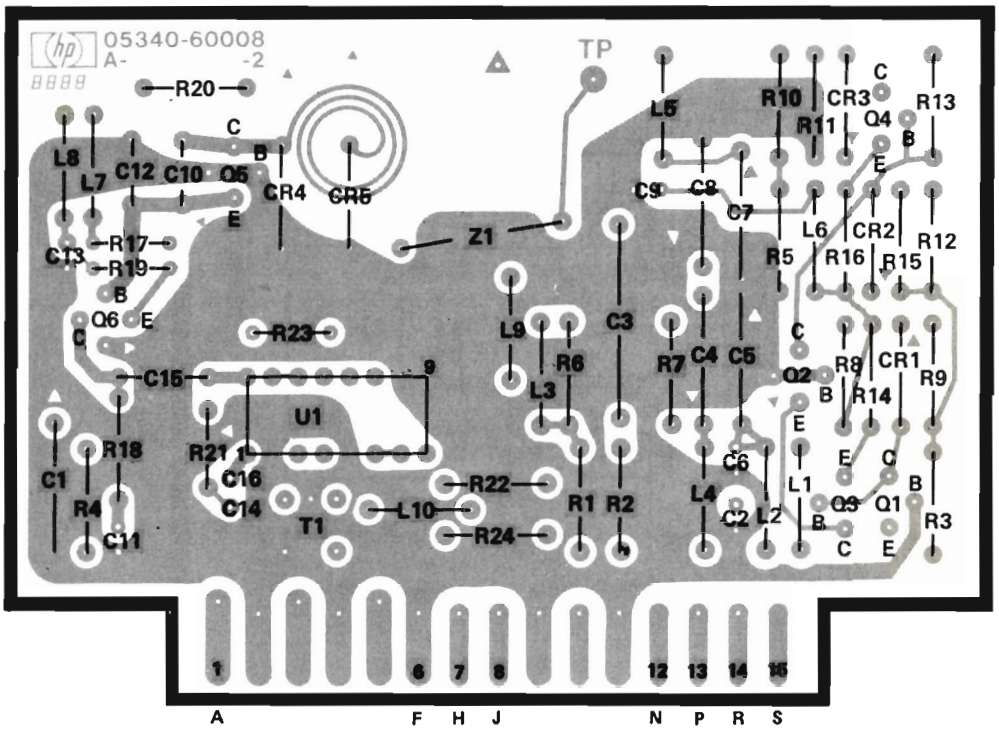


Figure 7-8. A10, A12 VCO No. 1 and No. 2, Component Locator



VII

Figure 7-9. A33 Power Supply (Series 1236A) Schematic Diagram

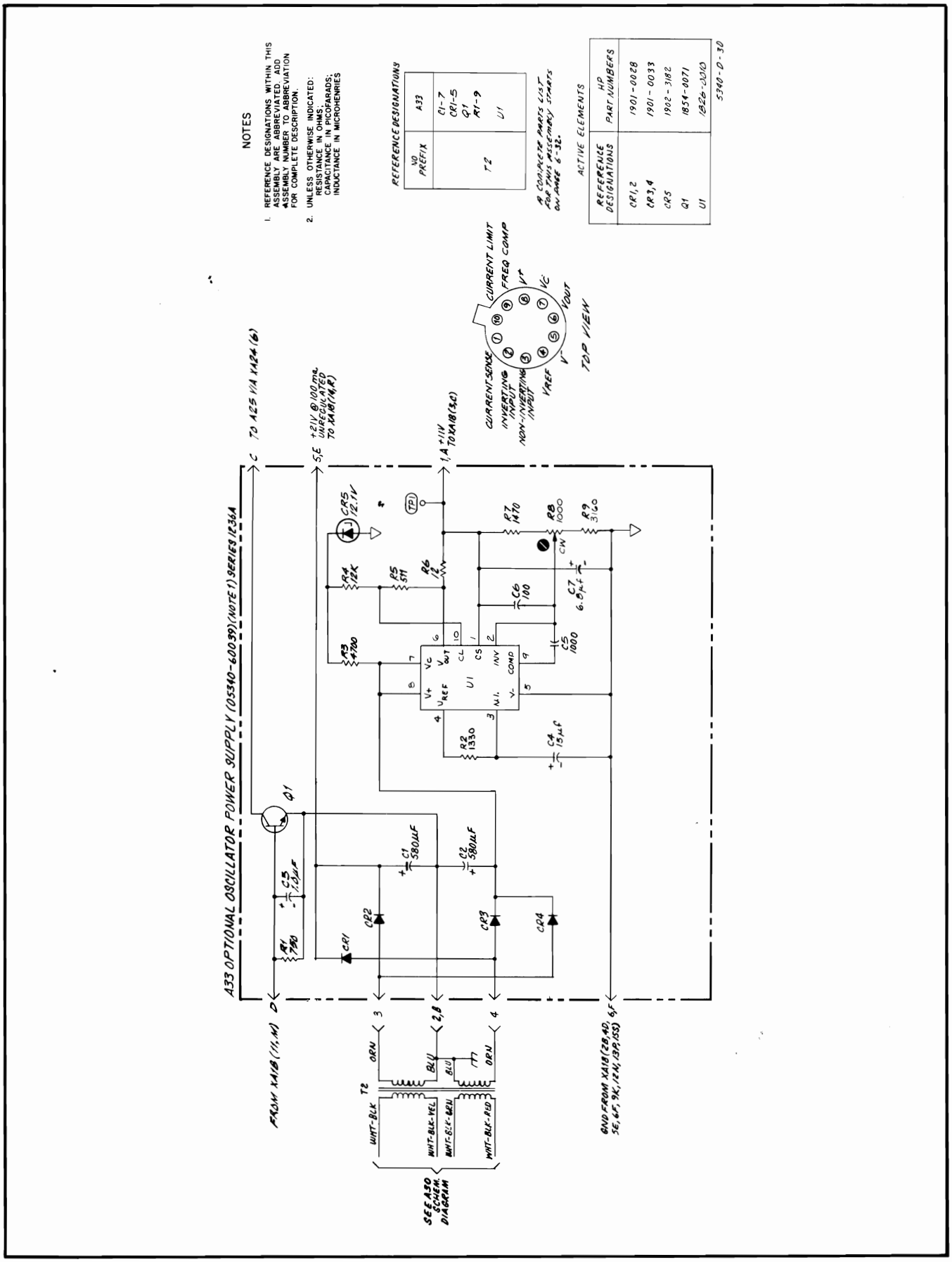
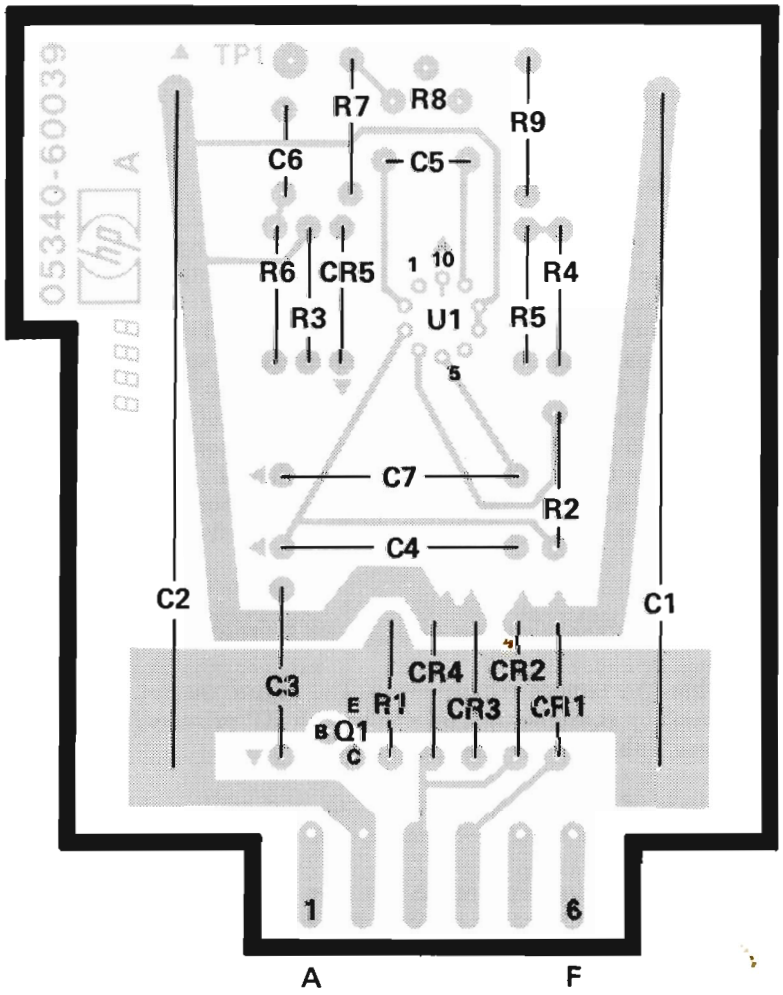


Figure 7-10. A33 Power Supply (Series 1236A), Component Locator



7-9. OPTIONS

7-10. Options 001, 002, and 011 are available for the 5340A. Following is a description of each option.

7-11. Option 001 High-Stability Oscillator

7-12. Specifications for Option 001 are listed in Table 1-3. This option consists of deleting the standard oscillator assembly (05340-60036) and adding the following assemblies and parts:

a. A18 10544A oscillator assembly plugs into XA18 in place of the standard oscillator. The schematic diagram is shown in Figure 8-24. The parts list is given in Table 6-3.

b. A33 Power Supply (plugs into XA33). The schematic diagram is shown in Figure 8-35 and the parts list is given in Table 6-3. Theory is contained in Section IV.

c. Transformer T2. The schematic diagram is shown in Figures 8-33 through 8-35. The part number is listed in Table 6-3.

7-13. Option 002, Rear Panel Connectors

7-14. This option provides input connectors on the rear panel. Input 1 (10 Hz - 18 Hz Type N J2) is installed on the rear panel in place of J1 on the front panel. Input 2 (10 Hz - 250 MHz BNC J8) is installed on the rear panel in addition to J4 on the front panel. In addition, a 50-ohm termination is installed on the front panel BNC connector J4. The termination reduces the input impedance to 50-ohms. This ensures that the 5340A meets all specifications when Option 002 is installed. When the 5340A is equipped with this option, 10 Hz to 250 MHz direct count inputs can be connected to either the rear panel (J8) or the front panel connector (J4). When the input is connected to the front panel input, the termination is removed and installed on the rear panel BNC connector J8. Parts for Option 002 are listed in Table 6-4. See Figures 8-2, 8-4, and 8-5 for connector locations. The schematic diagram for the direct count input is shown in Figure 8-9. The wiring for the rear panel N connector is the same as the front panel configuration, see Figure 8-6.

7-15. Option 011, Remote Programming and Digital Output

7-16. Option 011 provides for remote programming and digital output. The digital output feature requires additional accessory equipment to interface with HP printers, computers, and calculators (see Table 1-2). Also, see Table 1-3 for specifications.

7-17. Option 011 consists of deleting assembly A19A and adding the parts listed in Table 6-5. Schematic diagrams are given in Figure 8-26 and 8-36.

7-18. Operation and programming information is given in Section II. Theory of Operation for the assemblies associated with this option is given in Section IV.

7-19. FIELD INSTALLATION OF OPTIONS

7-20. Installation of Option 001, High-Stability Oscillator

7-21. The following parts are required:

A18	10544-60011	Oscillator Assembly	1 ea.
A33	05340-60039	Oscillator Power Supply	1 ea.
T2	9100-3021	Transformer	1 ea.
	2420-0001	6-32 Snap Hex Nut	2 ea.
	05340-20044	Oscillator Spacer	2 ea.
	2360-0115	6-32 x 5/16 Pan Head Screw with lock washers	2 ea.
	3050-0066	Washer:Flat #6	2 ea.

7-22. To install Option 001, refer to Figures 8-2 and 8-3 for instrument photos and Figures 8-24, 8-34, and 8-35 for schematics. Remove top and bottom covers and proceed as follows:

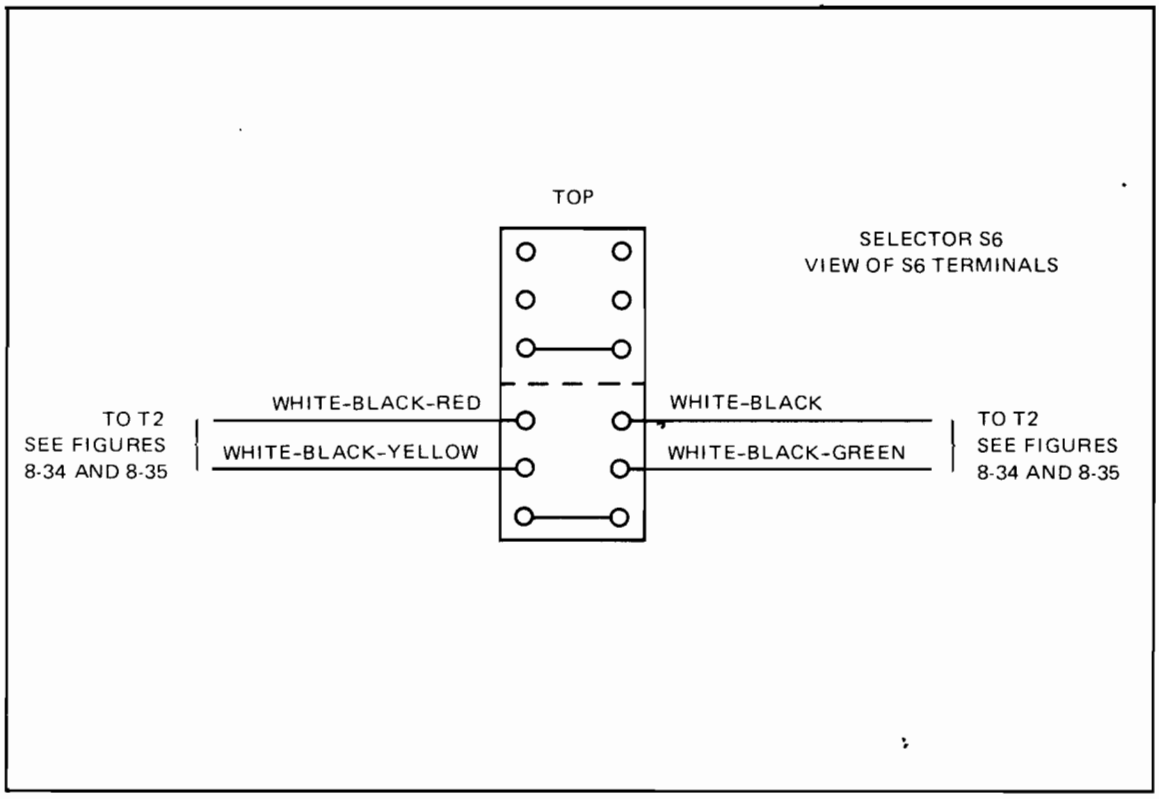
a. Remove A18 (05340-60036) and replace with High Stability Oscillator 10544A.

b. On bottom of chassis, secure 10544A as follows:

(1) Place oscillator spacers over oscillator studs protruding through chassis.
(2) Using lockwashers, fasten the two 6-32 x 5/16 screws to the oscillator studs.

c. Install transformer T2 into holes provided. Attach with 6-32 hex snapnuts.

d. Dress the group of striped wires from T2 toward T1 and through the cable clamp next to T1. Continue to dress the wires between the power supply motherboard A30 (05340-60029) and the left side frame and then toward the rear of the chassis. Route the striped wires through the hole nearest to the left side frame. (The hole next to the fan will have no wires running through it.) Cut, dress, and strip the striped wires and solder them to S6 as shown below. See Figures 8-34 and 8-35 for schematic diagrams.



e. Cut, dress, strip, and solder the solid colored wires from T2 as follows:

Orange wire (either one) to XA33 pin 3.
Other orange wire to XA33 pin 4.
Both blue wires to XA33 pins 2 and B. (XA33 pins 2 and B are already connected to chassis through a black wire.)

f. Install A33 (05340-60039) into XA33.

g. Apply ac power to counter and note that the * annunciator lights. The * should remain lit for approximately 20 minutes. Adjust power supply A33 as described in Table 5-3 step 1g. Adjust oscillator as described in Table 5-3, step 10.

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7-23. Installation of Option 002, Rear Panel Connectors

7-24. The following parts are required:

R4	11593A	50-ohm termination	1 ea.
W17	05260-6034	Low Frequency Input Cable	1 ea.
W18	05340-60060	18 GHz Rigid Coax Assembly	1 ea.
J8	1250-0102	BNC connector	1 ea.
For J8	08731-201	Nut	1 ea.
MP18	05340-00024	Front Panel Trim (not necessary for field modification. Has no cutout for J1. May be installed if desired to have field modification match factory installed option).	

7-25. To install Option 002, refer to Figures 6-1, 8-4, and 8-5 for instrument photos and proceed as follows:

a. Remove right trim plate MP1, right side cover MP13, and right side frame MP12.

b. Remove left trim plate MP1 and remove the two screws that fasten the front panel (MP15) to the left side frame (MP3).

c. Remove nut that secures the front panel to the chassis (MP4).

d. On CP1, loosen the coupling nut that secures the rigid coax line to J1.

e. Loosen J1 and push it rearward out of the front panel. Save the nut that secures the N connector to the front panel. This will be used for the rear panel N connector. Also save the aligning pin from the front panel N connector.

f. On rear panel, remove plugs in holes for J2 and J8. If original front trim panel is retained, insert plug into hole left after removal of J1.

g. Install N connector of assembly 05340-60060 into rear panel hole marked J2. Dress rigid coax along the right side of chassis and through the two cable clamps. Use the nut from the front panel N connector and the aligning pin to oreint and secure J2 to the rear panel. Do not overtighten the nut on J2.

CAUTION

DO NOT TIGHTEN THE FITTINGS ON CP1 TO MORE THAN 12 IN-LBS. DAMAGE TO FITTINGS MAY RESULT.

h. Secure the rigid coax cable fitting to CP1.

i. Secure cable W17 (05260-6034) to BNC connector (1251-0102). Push cable end through hole marked J8 on the rear panel. Use nut (08731-201) to secure connector. Route low frequency cable from rear panel along the right side of chassis through the two cable clamps.

VII

j. If desired to replace front panel trim (MP17), remove knobs and hardware for S1, S2, R1/S3, and S4. Also unsolder the capacitor lead that connects from A3 to J4. Remove J4 from front panel. Install new trim panel MP18.

k. Solder the center conductor of the low frequency cable to the center pin of J4. Solder the shield to the ground post next to J4.

l. Reassembly the front panel, side frames, and side covers.

m. Install 50-ohm termination on J4.

7-26. Installation of Option 011, Digital Input/Output

7-27. The following parts are required:

A19	05340-60032	Interface B Assembly	1 ea.
A34	05340-60067	Bus Communicator Assembly	1 ea.
A35	05340-60068	Connector Assembly	1 ea.
W19, W20	8120-0520	ASCII Bus Cable	2 ea.
A20	05340-60073	Time Base Assembly (Required for instruments with serial prefix 1252A and below. The 05340-60018 board must be replaced with an 05340-60073 board.	
CR2	1901-0028	Diode	1 ea.
	05340-00026	Insulator	1 ea.
	2360-0197	Pozi-drive Screws 6-32 x 3/8	4 ea.
	2200-0103	Pozi-drive Screws 4-40 x 1/4	4 ea.
	2190-0017	Lockwashers for Standoff Stud Mount	2 ea.
		Solder Lug	1 ea.

7-28. Figure references that are useful during installation include Figures 8-2, 8-3, 8-5, 8-26, and 8-36. To install Option 011, proceed as follows:

a. Remove A19A (05340-60031).

b. On the rear panel, remove the blank plate by removing the four pozi-drive screws.

c. On A19B (05340-60032) install cables W19 and W20 in sockets J1 and J2 located on the right edge of the board. See Figure 8-26 component locator. Pins 1 and 14 of both cable connectors should be oriented toward the top of the pc board. The white arrows on the connector will point toward the board. W19 will be the cable connected to the top most socket of A19B.

d. Install A19B into XA19 and dress the cables past the casting assembly toward the rear of the instrument.

e. Install 05340-60073 Time Base board into XA20 for instruments not so equipped.

f. Locate A34 (05340-60067). Connect the plug from cable W19 to the socket on A34 that is closest to integrated circuit U3. Connect the plug from cable W20 to the socket adjacent to the large 24-pin Cinch connector. The white arrows on the connector will point toward the board.

g. Install A34 behind the rear panel. Align the four standoffs on A34 toward the rear panel. The 24-pin Cinch connector on A34 should be aligned toward the bottom of the instrument. Use four 6-32 x 3/8" pozi-drive screws to secure A34 to the rear panel. Dress cables W19 and W20 along the casting assembly and away from the power supply boards. Install the insulator between the power supply boards and W19 and W20.

h. Install A35A1 (05340-60066) and A35J1 (Digital Input-Output Type 57 connector) in the Option 011 plate (plate with the six slide switches). See Figure 8-5 for correct orientation of A35J1. Secure A35J1 using the standoff stud mount and split lock washers. Using four 4 x 40 x ¼" posi-drive screws, secure the Option 011 plate to the outside rear panel. The pc insterconnect board mates with A34J1. Except for the black wire, route the wires soldered to the slide switches toward the bottom of the chassis.

i. Locate the black wire soldered to switch A35S6 (TALK-ALWAYS). Solder the other end of the black wire to the black wire already soldered to switch S5 (INT-EXT).

j. Prepare a #22 or #24 gauge insulated wire (WHT-BLK-RED) approximately 30" long. Solder one end to XA24 (05340-60019) pin 4. A diode (HP part number 1901-0028) should be installed between XA24 pin 4 and pin 2 (see Figure 8-36). Connect cathode (marked end) to pin 4.

k. Route the 30" wire along the front edge of the chassis past A1 on to the top of the chassis. Continue to route the wire along the right top of the chassis rearward toward the rear panel. Route the wire to the bottom of A34 and solder to the A34 eyelet marked +5 V on Figure 8-36 component locator.

l. Solder the violet wire from A35S6 (TALK ALWAYS-ADDRESSABLE) to the A34 eyelet marked S6 on Figure 8-36.

m. Solder the blue wire from A35S6 to the A34 eyelet marked "Shield" on Figure 8-36.

n. Solder the green wire from A35S5 (switch A5) to the A34 eyelet marked S5 on Figure 8-36.

o. Solder the yellow wire from A35S4 (switch A4) to the A34 eyelet marked S4 on Figure 8-36.

p. Solder the orange wire from A35S3 (switch A3) to the A34 eyelet marked S3 on Figure 8-36.

q. Solder the red wire from A35S2 (switch A2) to the A34 eyelet marked S2 on Figure 8-36.

r. Solder the brown wire from A35S1 (switch A1) to the A34 eyelet marked S1 on Figure 8-36.

s. This completes installation of Option 011 refer to Paragraph 7-15 for descriptions. See Section II for programming information.

VII

SECTION VIII

SCHEMATIC DIAGRAMS

8-1. SCHEMATIC DIAGRAMS

8-2. This section contains schematic diagrams, assembly and chassis part locators, component locators, block diagrams, waveforms, test points, and troubleshooting information. The schematics are presented in assembly number order A1 through A35. The component, chassis, and assembly locators show the location by reference designator. The block diagrams give a simplified block of the corresponding schematic diagram. Test points, waveforms, and typical voltages are given as an aid in troubleshooting.

8-3. SCHEMATIC DIAGRAM NOTES, ASSEMBLY NUMBERS, AND REFERENCE DESIGNATORS

8-4. Figure 8-1 shows the symbols used on the schematic diagrams. At the bottom of Figure 8-1, the system for reference designators, assemblies, and subassemblies are shown.

8-5. Reference Designations

8-6. Assemblies such as printed circuit boards are assigned numbers in sequence, A1, A2, etc. As shown in Figure 8-1, subassemblies within an assembly are given a subordinate A number. For example, rectifier subassembly A1 has the complete designator of A25A1. For individual components, the complete designator is determined by adding the assembly number and subassembly number if any. For example CR1 on the rectifier assembly is designated A25A1CR1.

8-7. Identification Markings on Printed-Circuit Boards

8-8. HP printed circuit boards (see Figure 8-1) have four identifications numbers; an assembly part number; a series number, a revision letter, and a production code.

8-9. The assembly part number has 10 digits (such as 05340-60037) and is the primary identification. All assemblies with the same part number are interchangeable. When a production change is made on an assembly that makes it incompatible with previous assemblies, a change in part number is required. The series number (such as 1248A) is used to document minor electrical changes. As changes are made, the series number is incremented. When replacement boards are ordered, you may receive a replacement with a different series number. If there is a difference between the series number marked on the board and the schematic in this manual, a minor electrical difference exists. If the number on the printed-circuit board is lower than that on the schematic, refer to Section VII for back dating information. If it is higher, refer to the loose leaf manual change sheets for this manual. If the manual change sheets are missing, contact your local Hewlett-Packard Sales and Service Office. See the listing on the back cover of this manual.

8-10. Revision letters (A, B, etc.) denote changes in printed circuit layout. For example, if a capacitor type is changed (electrical value may remain the same) and requires different spacing for its leads, the printed circuit board layout is changed and the revision letter is incremented to the next letter. When a revision letter changes, the series number is also usually changed. The production code is the four digit, seven segment number used for production purposes.

8-11. ASSEMBLY LOCATIONS AND COMPONENT LOCATORS

8-12. Figures 8-2 through 8-5 show the front, rear, top, and bottom views of the 5340A. Following these is an overall block diagram and schematic diagrams for the instrument. Component locators for each printed circuit assembly are located next to the schematics.

8-13. MNEMONICS AND ABBREVIATIONS

8-14. Table 8-1 lists mnemonics and abbreviations peculiar to the 5340A. Common abbreviations are given in Section VI.

Table 8-1. 5340A Mnemonics and Abbreviations

CHK	Check
CLK	Clock
CONT	Control
CTR	Counter
DAC	Data Accepted
DAV	Data Valid
DIO	Data Input Output
DIR CNT	Direct Count
DIR SW	Direct Switch
DISP REG	Display Register
D.P.	Decimal Point
IFC	Interface Clear
F.F.	Feed Forward
Fx	Input Frequency
HI-Z	High Impedance
I.L.	Input Loop
INH	Inhibit
INT	Internal
M. GATE	Main Gate
ATN	Attention
N.C.	No Connection
O'FLO	Overflow
PE	Parallel Enable
P/O	Part of
PROG	Program
P SHIFT	Parallel Shift
P TRAN Q	Parallel Transfer Qualifier
R COUNT	Reset Counter
R DISP	Reset Display
REMT	Remote
REN	Remote Enable
RES A	Resolution A
RES B	Resolution B
RFD	Ready For Data
R.N.	Reset N Counter
S=7	Search in Seventh Step
SEL	Select
S RATE	Sample Rate
S RATE Q	Sample Rate Qualifier
SRQ	Service Request
S TRAN	Serial Transfer
S TRAN QUAL	Serial Transfer Qualifier
SUB	Subtract
SW A	Switch A
SW B	Switch B
TB	Time Base
T.L.	Transfer Loop
TP	Test Point
VCO	Voltage Controlled Oscillator
+5V DG	+5V Power For Digital Circuits

VIII

Figure 8-1. Schematic Diagram Notes

SYMBOLS

FRONT PANEL

REAR PANEL

INTERIOR AND PC BOARDS

WIPER MOVES TOWARD "CW" WHEN CONTROL IS ROTATED CLOCKWISE

POWER LINE GROUND

CIRCUIT COMMON GROUND

FLOATING GROUND

CHASSIS GROUND

KNOB CONTROL

SCREWDRIVER ADJUST

MAIN SIGNAL PATH

FEEDBACK PATH

TEST POINT

"AND" GATE

"OR" GATE

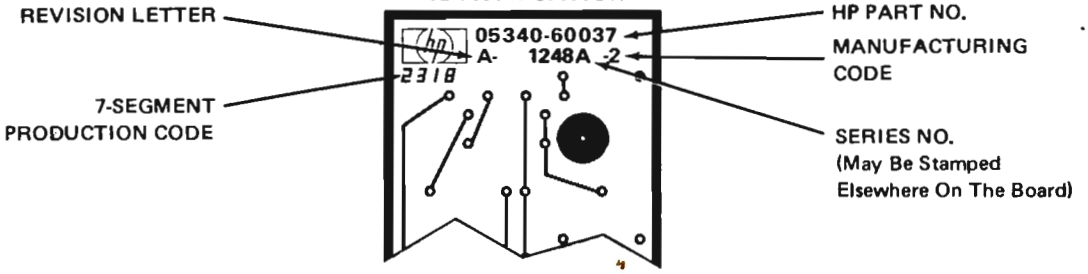
INVERTER

NAND GATE

NOR GATE

EXCLUSIVE NOR

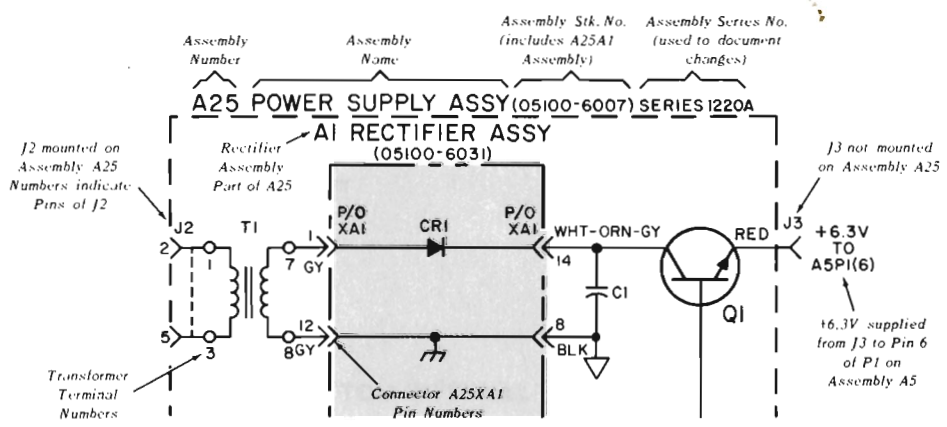
PRINTED CIRCUIT BOARD IDENTIFCATION



REFERENCE DESIGNATIONS

REFERENCE DESIGNATIONS WITHIN ASSEMBLIES ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION. JACKS ARE THE STATIONARY CONNECTORS AND PLUGS ARE THE MORE MOVEABLE OF TWO CONNECTORS.

ASSEMBLY	ABBREVIATON	COMPLETE DESCRIPTION
A25	C1	A25C1
A25A1	CR1	A25A1CR1
NO PREFIX	J3	J3



VIII

Figure 8-2. 5340A Top Internal View (with Options 001, 002, and 011 Installed)

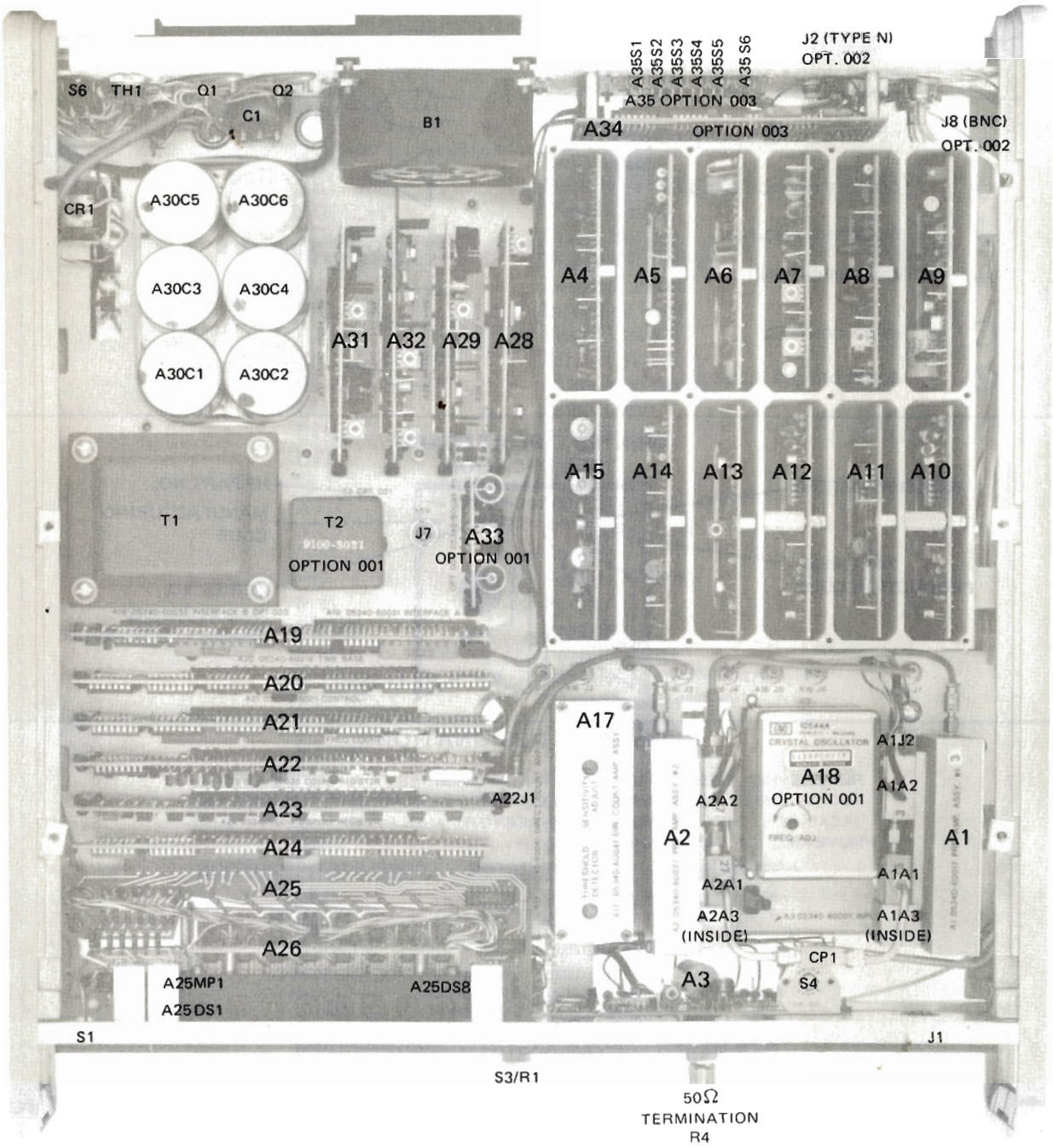


Figure 8-3. 5340A Bottom Internal View and Cable Numbers and Connections
(with Options 001, 002, and 011 Installed)

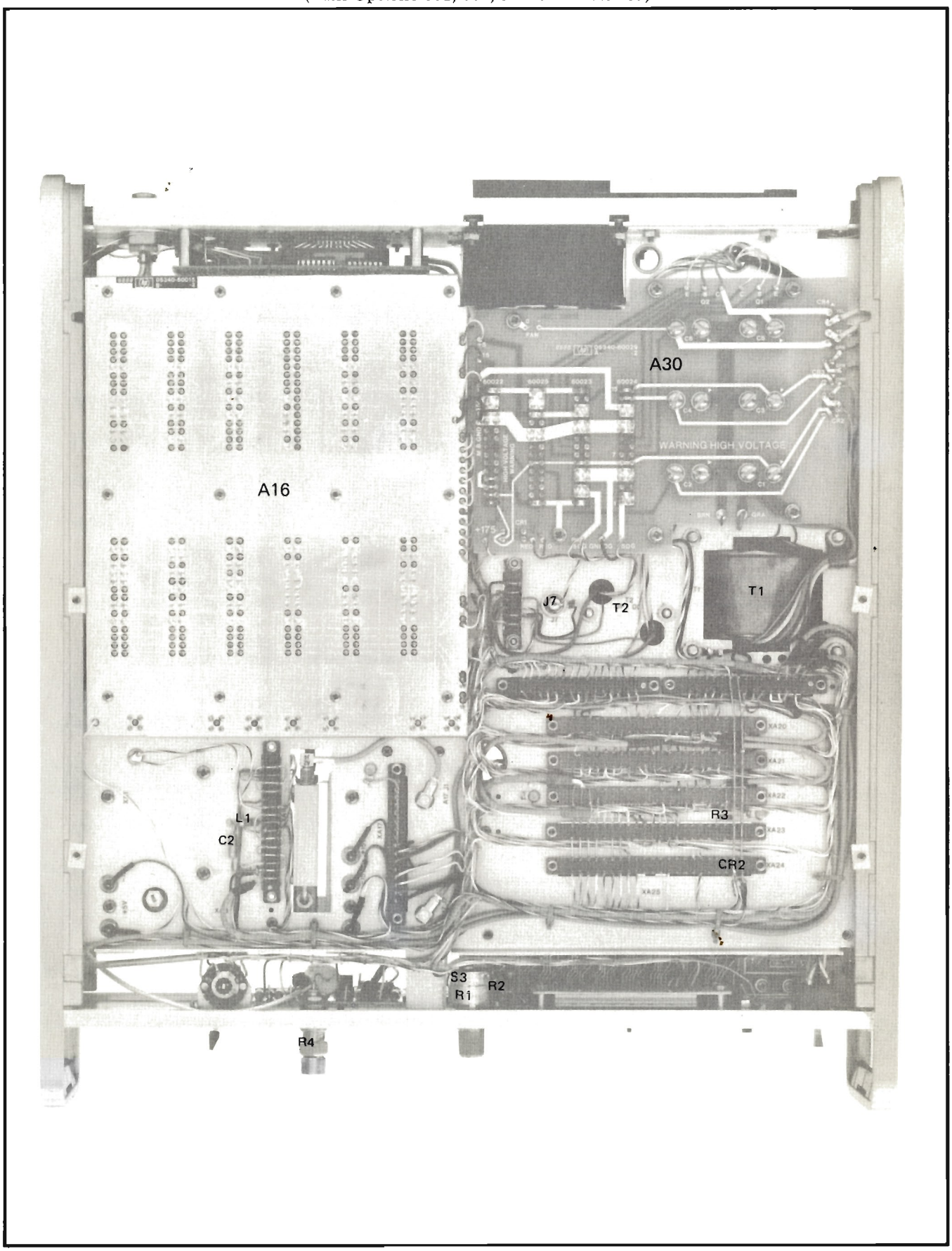


Figure 8-3. 5340A Bottom Internal View and Cable Numbers and Connections (with Options 001, 002, and 011 Installed)

Cable No.	Cable Name	Connects		HP Part Number	Wiring Method
		From	To		
W1	AC Line Switch	S1	S6	05505-60019	Soldered
W2	18 GHz Input	J1	CP1	05340-60028	Connectors
W3	Sampler #1	CP1	A1J2	05340-60033	Connectors
W4	A3 Output	A3 Output	XA22(21)	05340-60034	Soldered
W5	Sampler #2	CP1	A2J2	05340-60013	Connectors
W6	A1 Output	A1J1	A16J4	05340-60035	Connectors
W7	VCO 1/A1A2	A1A2J1	A16J5	05340-60044	Connectors
W8	AC Line Cord	J6	115/230VAC	8120-1378	Connectors
W9	A2 Output	A2J1	A16J3	05340-60048	Connectors
W10	A2FL1 Input	A17J1	A2FL1J4	05340-60049	Connectors
W11	Direct Count Output	A17J2	A22J1	05340-60050	Connectors
W12	10 MHz Doubler	A19A(E)	A16J1	05340-60051	A19 End-Soldered A16 - Connector
W13	VCO 1/A22	A16J6	A22(19)	05340-60052	A22 End-Soldered A16 - Connector
W14	VCO 2/A2A2	A2A2J1	A16J7	05340-60053	Connectors
W15	Harm Freq A14/A20	A16J2	A20(10)	05340-60054	A20 End-Soldered A16 - Connector
W16	Main Chassis	Primary Interconnect		05340-60065	---
W17	Low Freq Input Option 002	J8	J4	05260-6034	Soldered
W18	18 GHz Input Option 002	J2	CP1	05340-60060	Connectors
W19	ASCII Bus	A19J1	A34P1	05340-60063	Connectors
W20	ASCII Bus	A19J2	A34P2	05340-60063	Connectors
W21	Remote Prog Digital Output	A35J1	External Equipment	8120-1833	Connector

Figure 8-3
BOTTOM INTERNAL VIEW AND CABLE NUMBERS AND CONNECTIONS (with Options 001, 002, and 011 Installed)

(See Page 8-5)

Figure 8-4. 5340A Front Panel Reference Designations

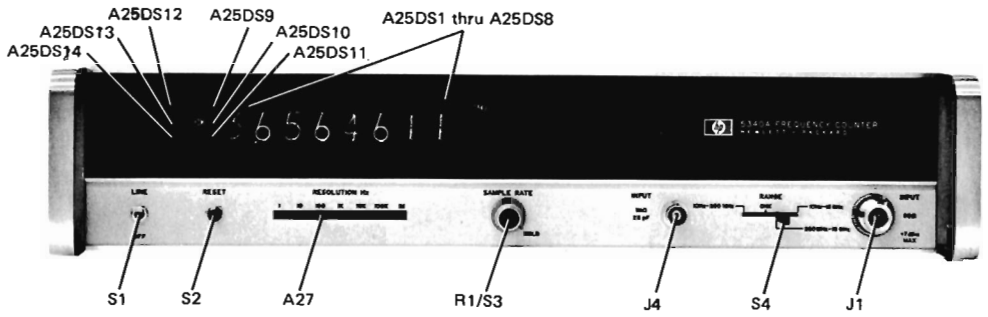
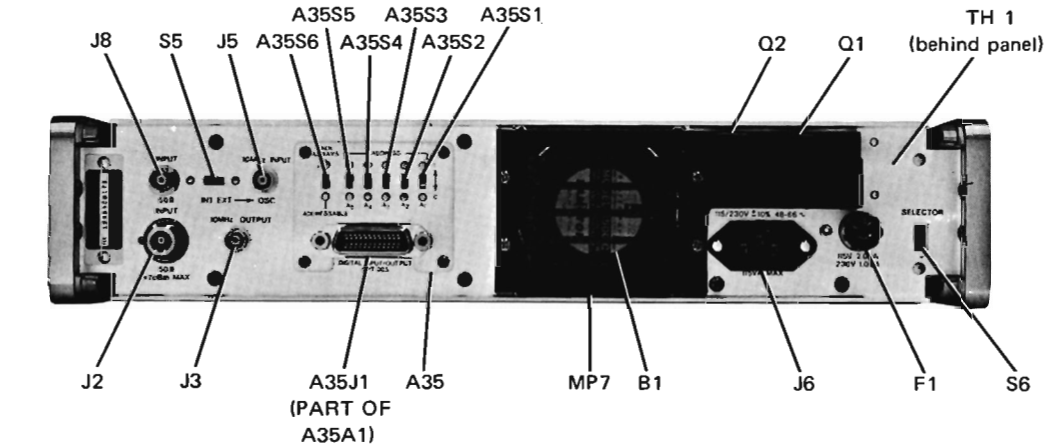
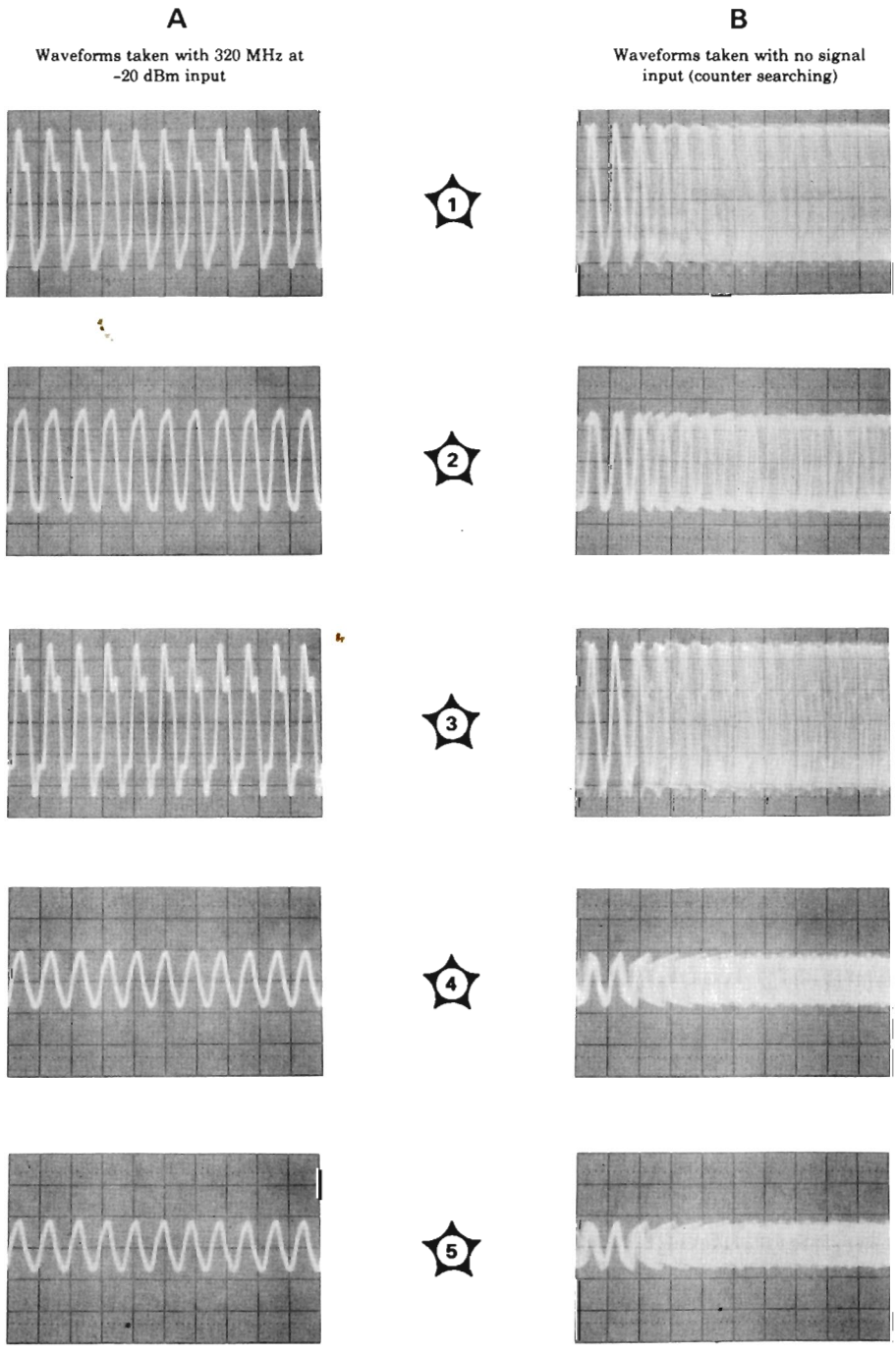


Figure 8-5. 5340A Rear Panel Reference Designations (with Options 002 and 011 Installed)



Part of Figure 8-6. 5340A Block Diagram



Waveforms ① through ⑤ taken with an HP Model 183A Oscilloscope with HP 1830A Vertical Amplifier and 1840A Time Base. An HP Model 1120A 500 MHz Probe was used with its 10:1 divider probe.

Oscilloscope Controls Set to:

MODE CHANNEL A
CHANNEL A ON
CHANNEL B OFF
TRIGGER INT, DC, + 1, +
MODE AUTO
SWEEP 01 μs/div
VERTICAL SENSITIVITY 02 v/div

Probe Controls Set to:

COUPLING AC
OFFSET OFF

5340A Controls Set to:

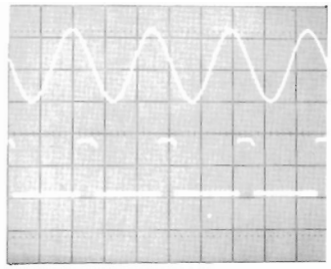
RESOLUTION 100 Hz
RANGE 10 Hz - 18 GHz

Waveforms A were taken with an HP Model 608C Signal Generator connected to the 5340A 50-ohm input connector. Waveforms B taken with no input signal.

VIII

6 OV –

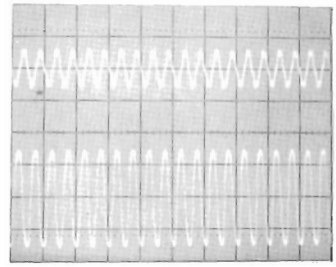
7 OV –



Top: .05V/div, dc
Bottom: .2V/div, dc
20 μs/div

8

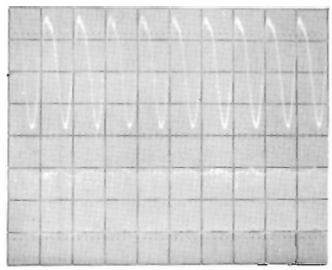
9



Top: .005V/div, ac
Bottom: .05V/div, ac
.1 μs/div

10

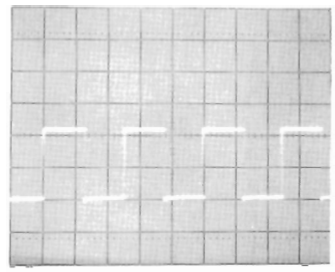
11



Top: .005V/div, ac
Bottom: .01V/div, ac
.05 μs/div

12

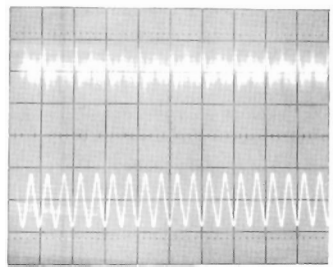
OV –



.2 V/div dc
10 μs/div

13

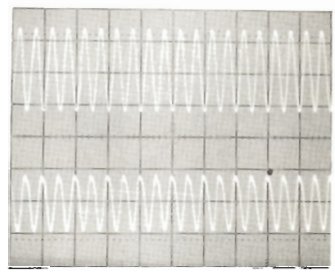
14



Top: .005V/div, ac
Bottom: .005V/div, ac
.1 μs/div

15 OV –

16 OV –



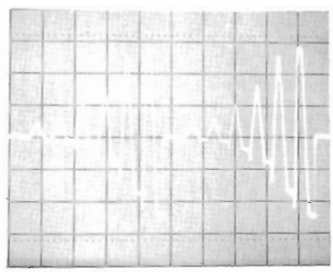
Top: .1V/div, dc
Bottom: .1V/div, dc
.1 μs/div

No Signal Input
to 5340A

17

Scope Sweep
Mode set to NORM

OV –



.2V/div, dc
20 ms/div

Except for 17, waveforms taken with 320 MHz input at -20 dBm. Waveforms 6 through 17 taken with HP Model 180A Oscilloscope with 1801A Vertical Amplifier and 1820B Time Base, 10:1 Divider Probe was used.

Set Oscilloscope controls to:

SWEEP MODE AUTO
SYNC SOURCE INT
Vertical Polarity + UP
MODE ALT

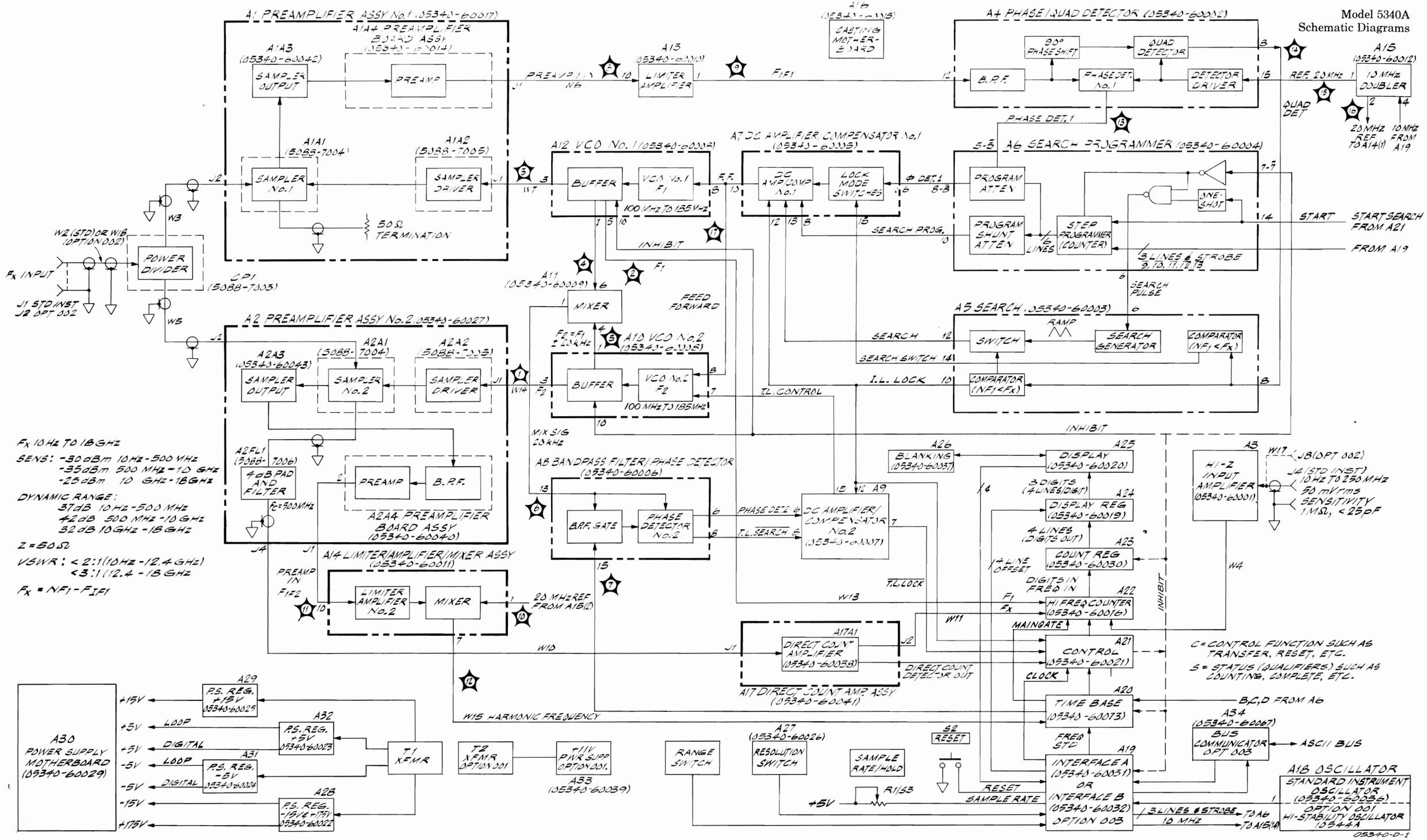
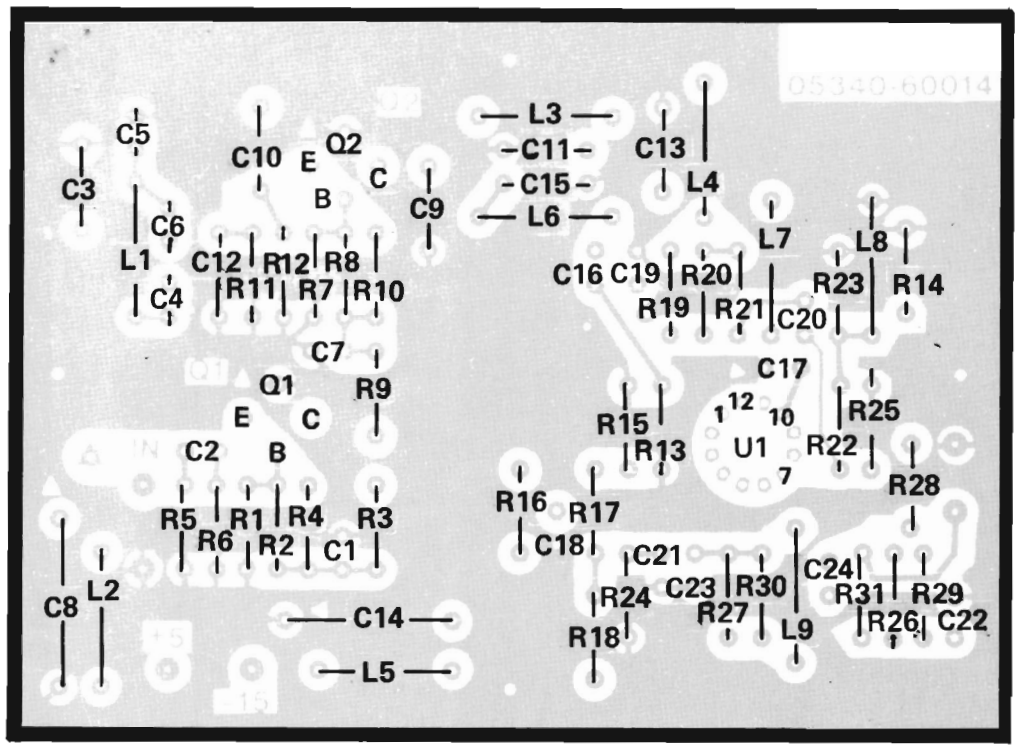
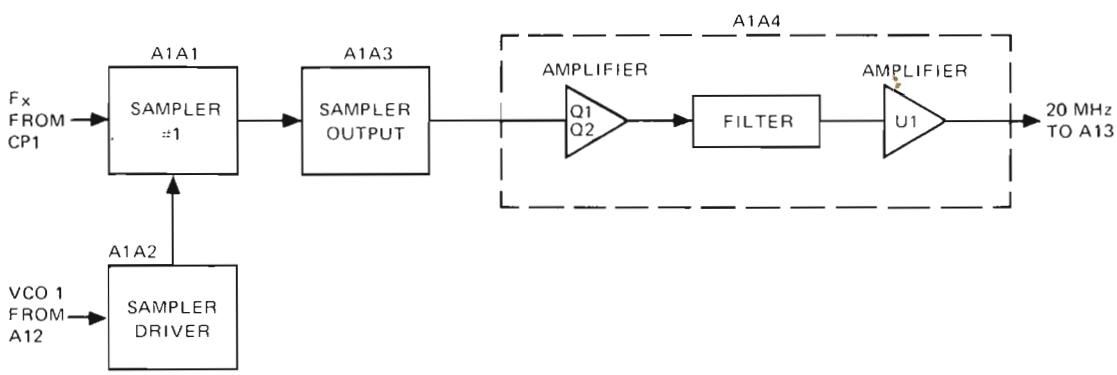


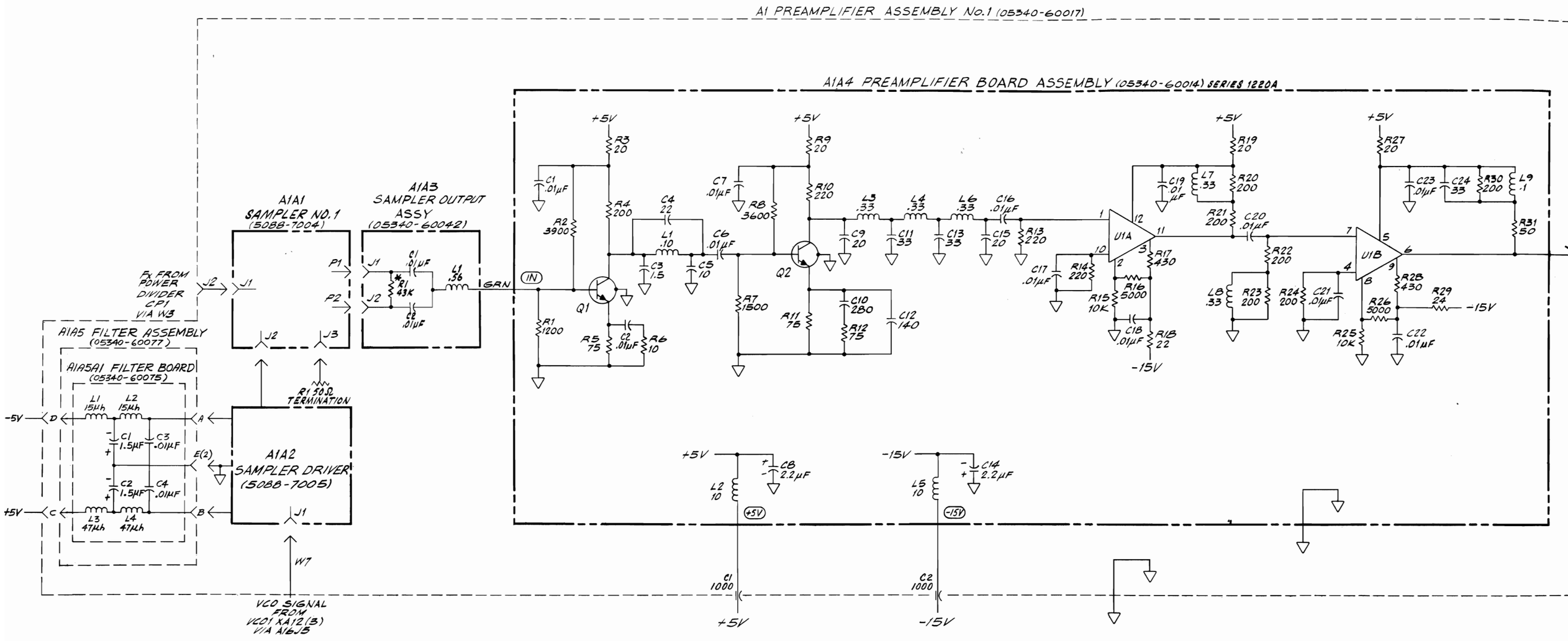
Figure 8-6. 5340A Block Diagram

Figure 8-6
5340A BLOCK DIAGRAM

(See Page 8-9)


05340-60014
C5
C10
Q2
E
C
B
C3
C9
C6
L1
C12
R12
R8
C4
R11
R7
R10
C7
Q1
R9
E
C
C2
B
R5
R1
R4
R3
R6
R2
C1
C8
L2
C14
L5
L3
C11
C15
L6
C13
L4
L7
L8
C16
C19
R20
R23
R14
R19
R21
C20
C17
R15
R13
U1
R22
R25
R28
R16
R17
C18
C21
R24
C23
R30
C24
R31
R29
R27
L9
R26
C22
R18


A1A4
A1A1
A1A3
AMPLIFIER
AMPLIFIER
Fx
FROM
CP1
SAMPLER
÷1
SAMPLER
OUTPUT
Q1
Q2
FILTER
U1
20 MHz
TO A13
A1A2
VCO 1
FROM
A12
SAMPLER
DRIVER



NOTES

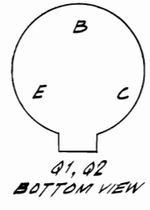
1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN

REFERENCE DESIGNATIONS

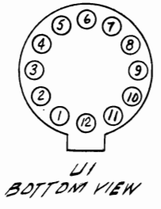
A1	A1A1	A1A2	A1A3	A1A4
C1,2			C1,2	C1-24
J1,2,3	J1,2	J1	J1,2	J3
			L1	L1-9
	P1,2		R1	
R1				Q1,2
				R1-31
				U1

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
Q1, 2	1854-0345 2N5179
U1	1858-0004 CA3049

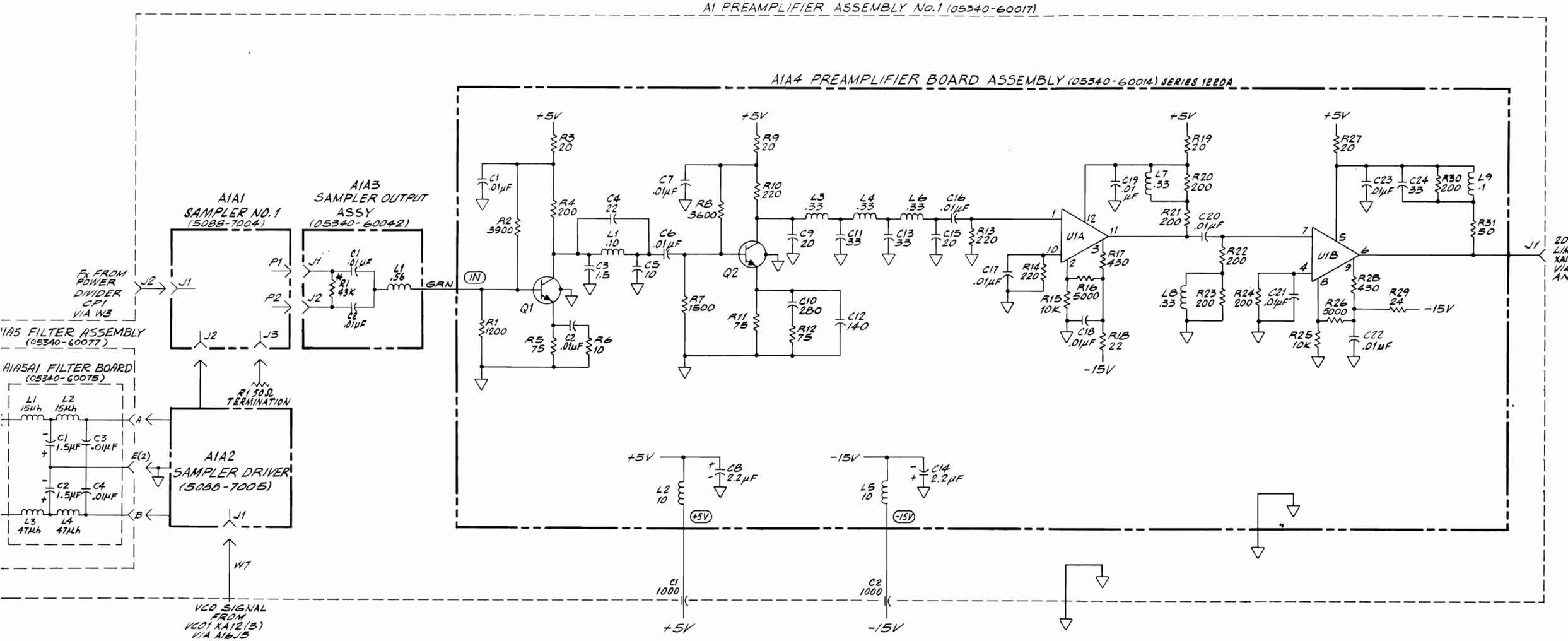


Q1, Q2 BOTTOM VIEW



U1 BOTTOM VIEW

Figure 8-7. A1 Preamplifier



NOTES

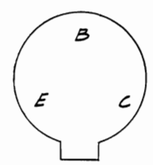
1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN

REFERENCE DESIGNATIONS

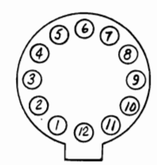
A1	A1A1	A1A2	A1A3	A1A4
C1,2 J1,2,3 R1	J1,2 P1,2	J1	C1,2 J1,2 L1 R1	C1-24 J3 L1-9 Q1,2 R1-31 U1

ACTIVE ELEMENTS

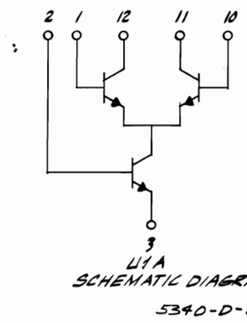
REFERENCE DESIGNATIONS	HP PART NUMBERS
Q1,2	1854-0345 2N5179
U1	1858-0004 CA3049



Q1, Q2
BOTTOM VIEW



U1
BOTTOM VIEW

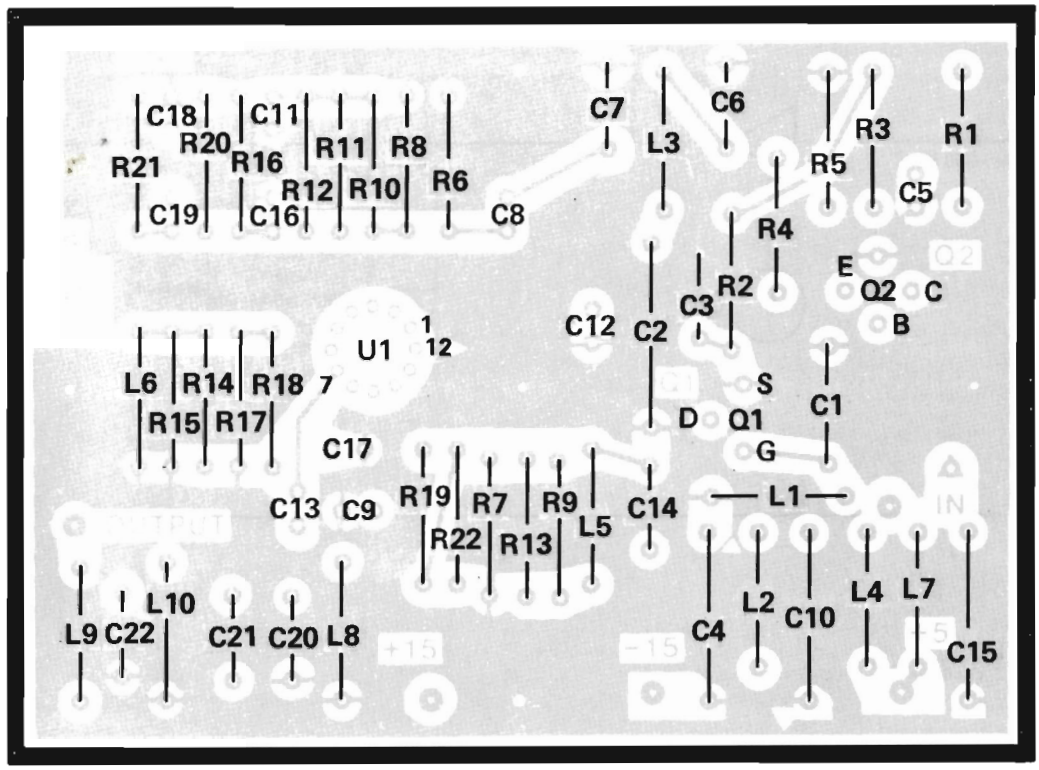


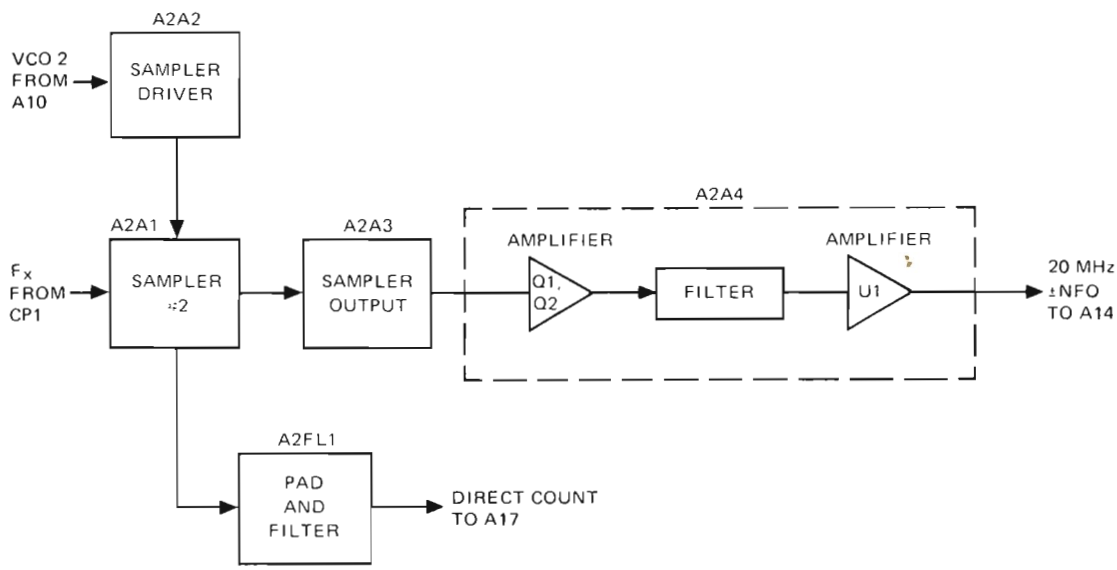
U1A
SCHEMATIC DIAGRAM
5340-D-2

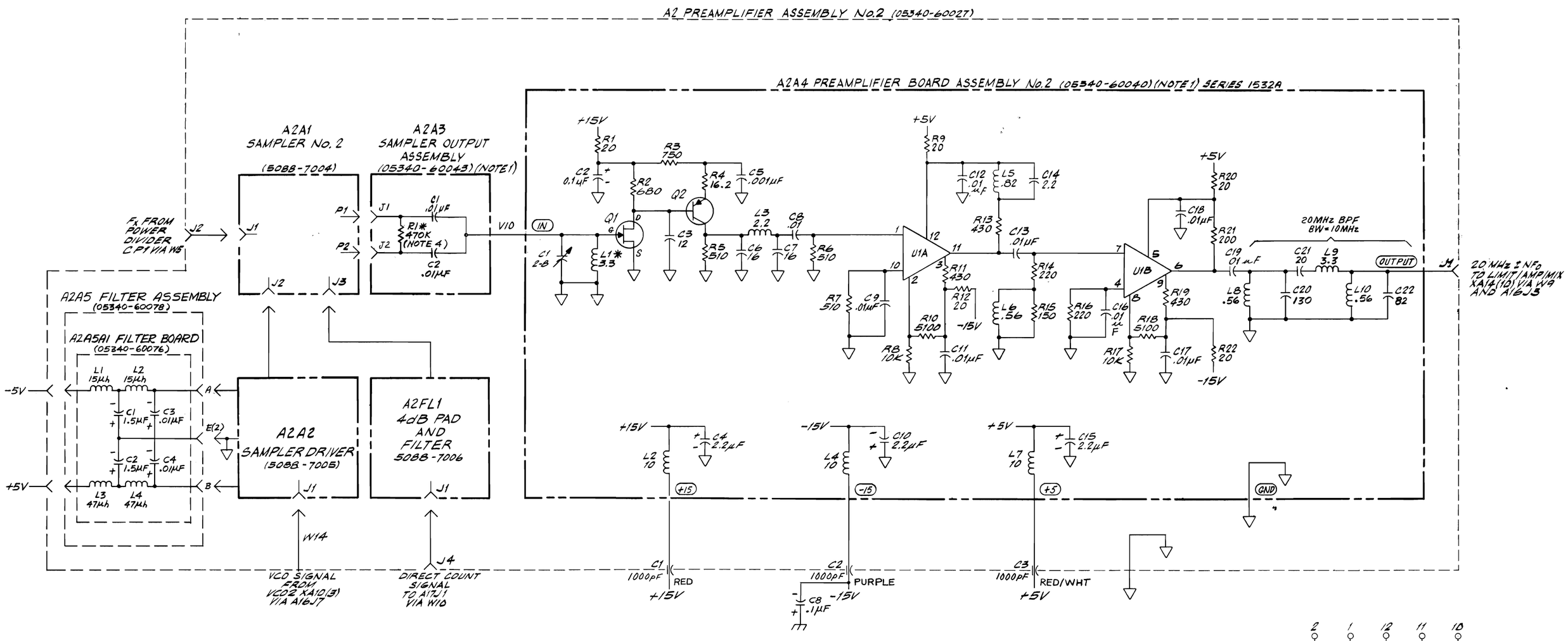
Figure 8-7. A1 Preamplifier Assembly No. 1

Figure 8-7
A1 PREAMPLIFIER ASSEMBLY NO. 1

(See Page 8-11)


C18
C11
R20
R21
R16
R11
R8
R12
R10
R6
C19
C16
C8
C7
C6
L3
R3
R1
R5
C5
R4
E
Q2
C
R2
C3
C12
C2
B
1
U1
12
L6
R14
R18
7
S
C1
R15
R17
D
Q1
C17
G
R19
R7
R9
C14
L1
C13
C9
R22
R13
L5
L10
L9
C22
C21
C20
L8
C4
L2
C10
L4
L7
C15


A2A2
VCO 2
FROM
A10
SAMPLER
DRIVER
A2A1
A2A3
A2A4
AMPLIFIER
AMPLIFIER
Fx
FROM
CP1
SAMPLER
÷2
SAMPLER
OUTPUT
Q1
Q2
FILTER
U1
20 MHz
±NFO
TO A14
A2FL1
PAD
AND
FILTER
DIRECT COUNT
TO A17



NOTES

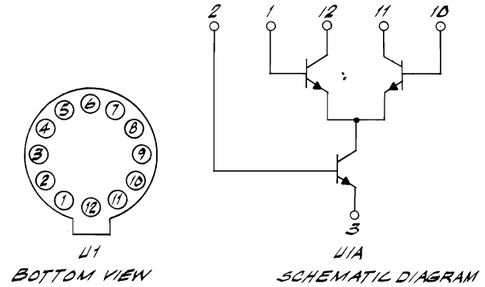
1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN
4. R1 HAS CHANGED FROM 43K TO 470K IN INSTRUMENTS WITH SERIAL NUMBER 1440A02476 AND UP.

REFERENCE DESIGNATIONS

NO PREFIX	A2	A2A1	A2A2	A2A3	A2A4	A2FL1
C8	C1-3 FL1 J1	J1-3 P1,2	J1	C1,2 J1,2 R1	C1-22 L1-10 Q1,2 R1-22 U1	J1

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
Q1	1855-0081 2N5245
Q2	1853-0015 2N3640
U1	1858-0004



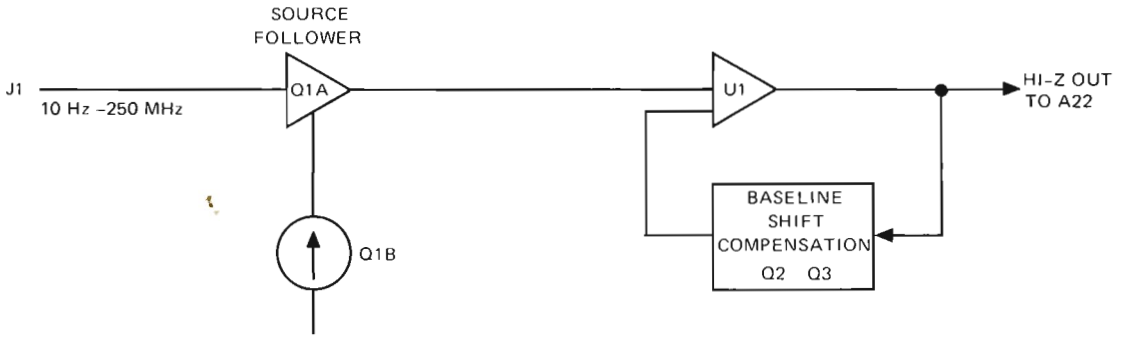
5340-D-3

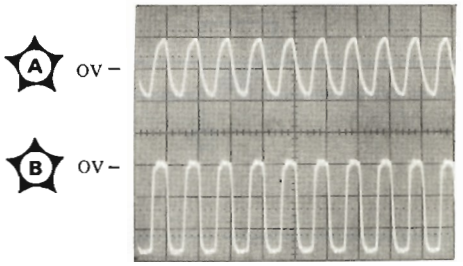
Figure 8-8. A2 Preamplifier Assembly No. 2

Figure 8-8
A2 PREAMPLIFIER ASSEMBLY NO. 2

(See Page 8-13)

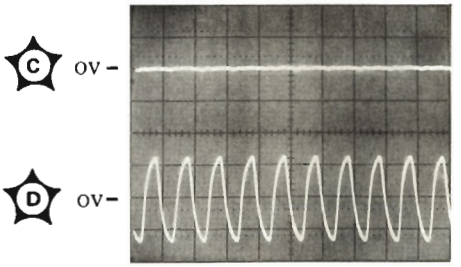
Part of Figure 8-9. A3 HI-Z Input Amplifier Assembly





(A) 10 MHz into 50Ω termination at J4 input oscilloscope A settings - 1V/cm dc, .1 μs/div.

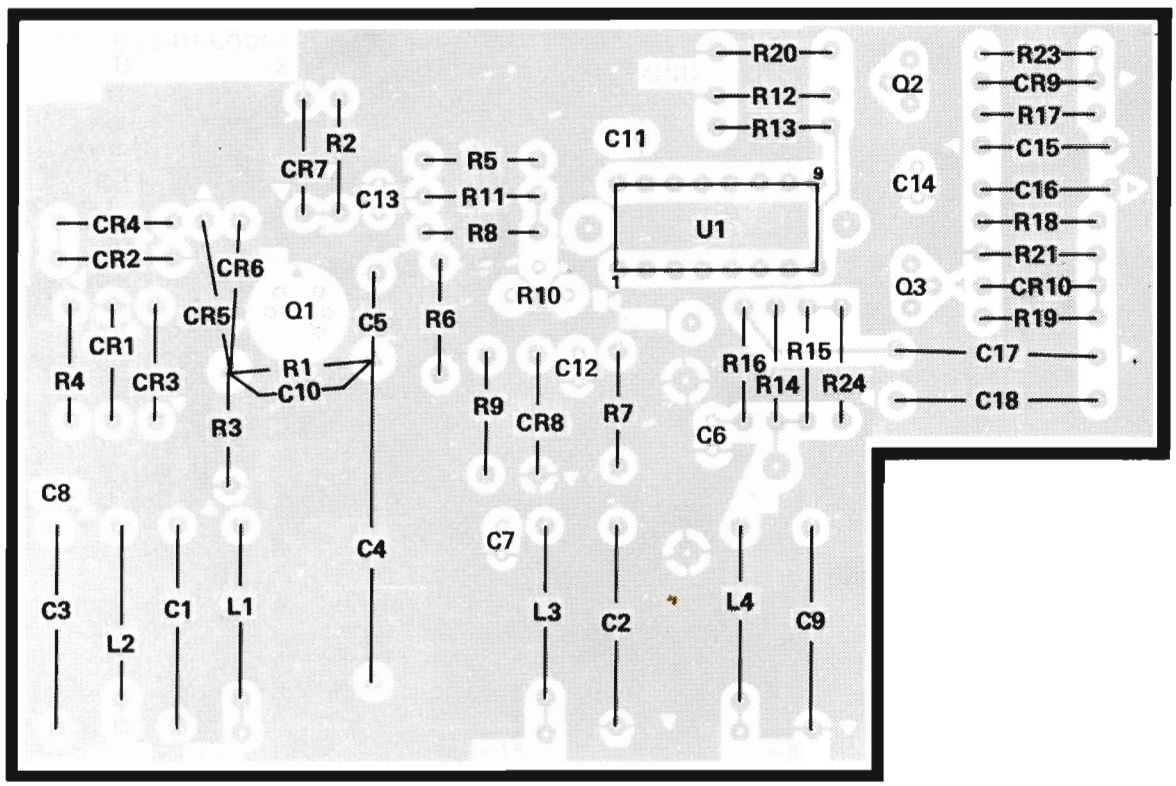
(B) A3U1(8) .05V/cm dc .1 μs/div.

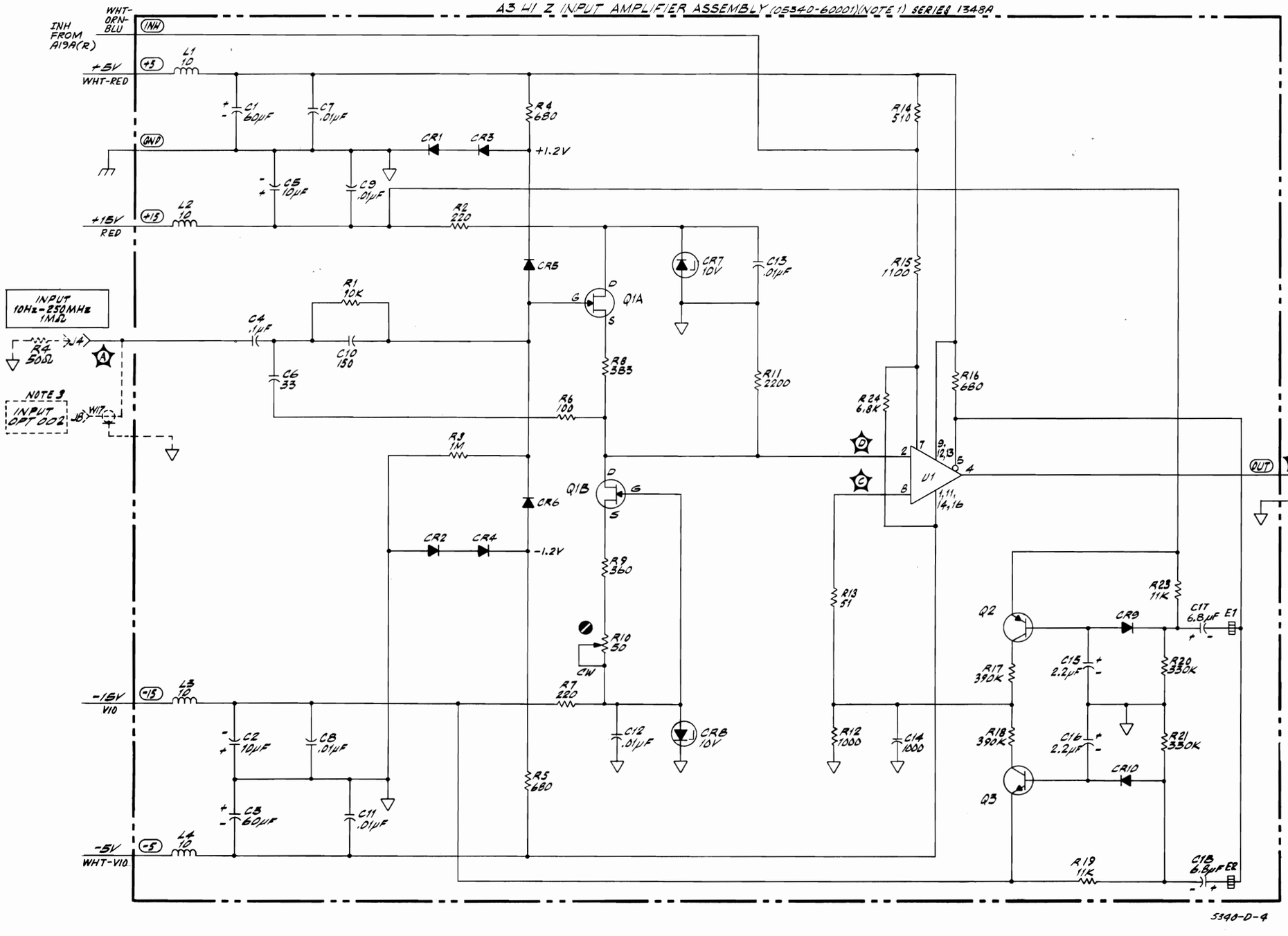


(C) A3 OUT. Oscilloscope B settings - .02V/cm, .1 μs/div.

(D) A3U1(2) .05V/cm dc .1 μs/div.

Waveforms taken with 10:1 divider probe except (A). Oscilloscope sync set to to ac INT, SLOPE to +, and DISPLAY to ALT.


R20
R12
R13
C11
R2
CR7
C13
R5
R11
R8
U1
9
1
Q2
C14
R23
CR9
R17
C15
C16
R18
R21
CR10
R19
C17
C18
Q3
CR4
CR2
CR6
CR5
Q1
C5
R6
R10
CR1
R4
CR3
R1
C10
R3
R9
C12
CR8
R7
R16
R15
R14
R24
C6
C8
C4
C7
C3
L2
C1
L1
L3
C2
L4
C9



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS.
3. DOTTED LINES REPRESENT OPTION 002 WIRING CIRCUIT.

REFERENCE DESIGNATIONS

A3
C1-18 CR1-10 E1 L1-4 Q1-3 R1-21,23,24 U1

R22 DELETED

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1-4	1901-0040
CR5,6,9,10	1901-0535
CR7,8	1902-0025
Q1	1855-0334 DN377
Q2	1853-0036 2N3906
Q3	1854-0215 2N3904
U1	1820-0754

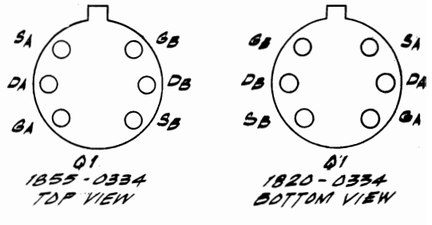
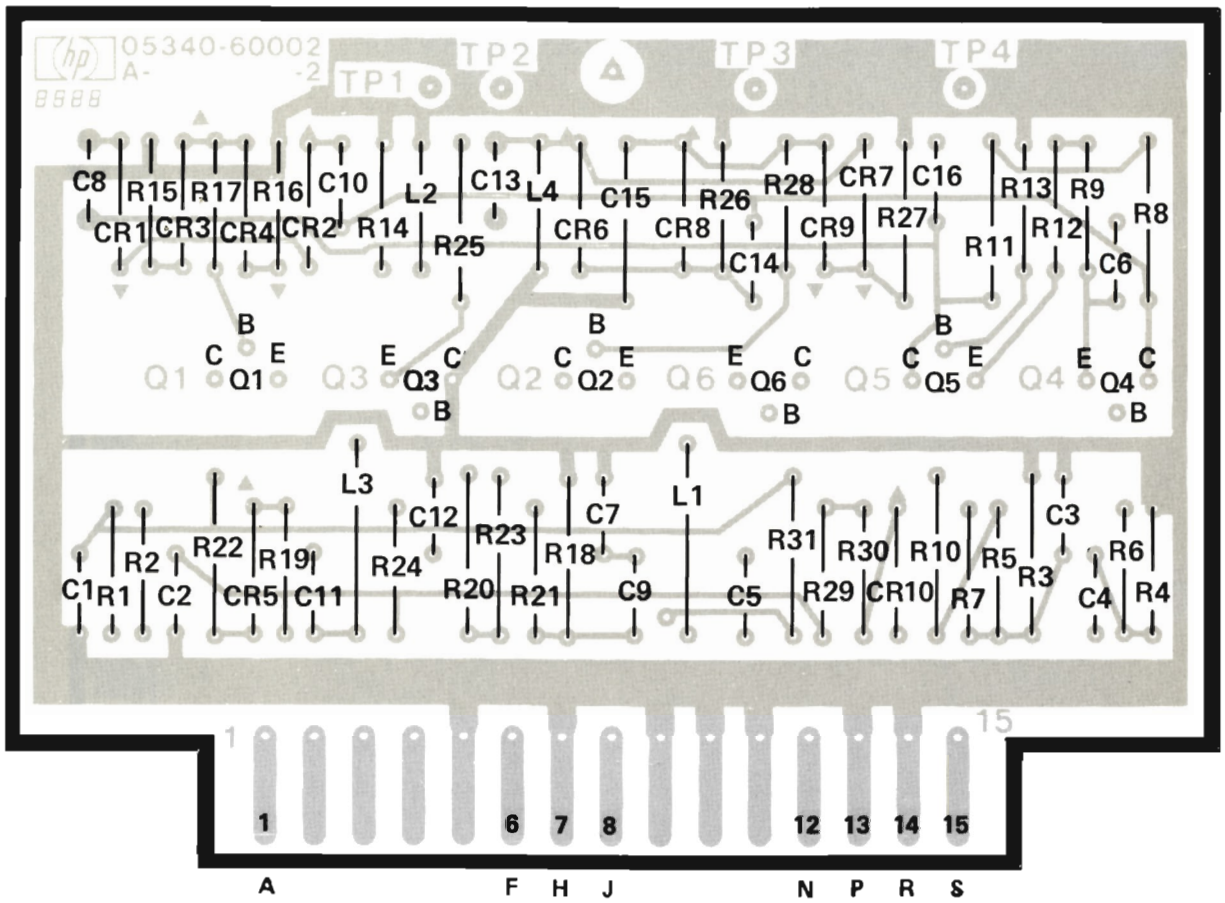
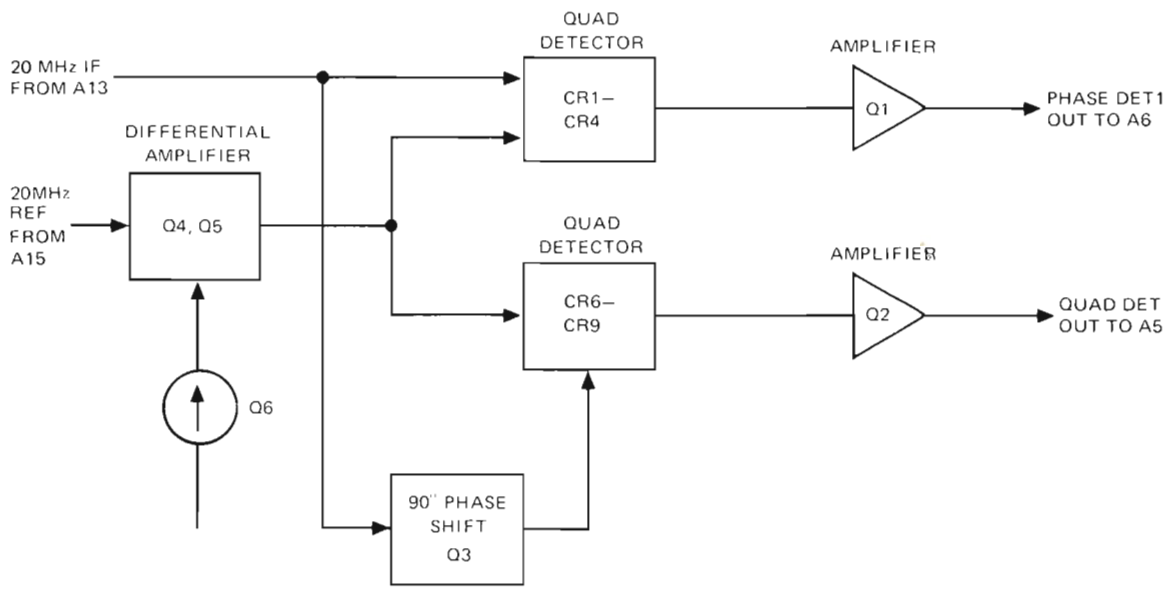


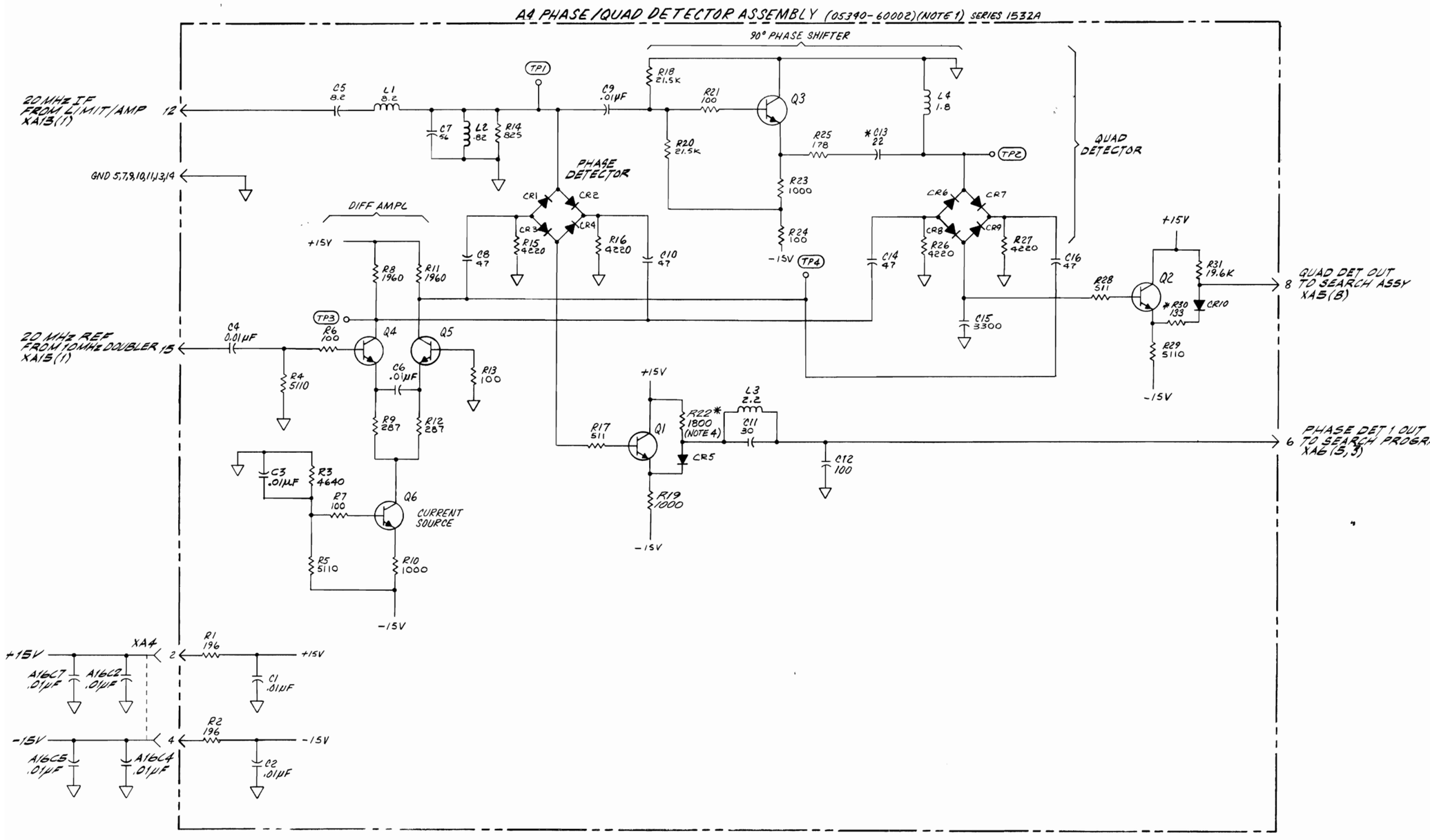
Figure 8-9. A3 HI-Z Input Amplifier Assembly

Figure 8-9
A3 HI-Z INPUT AMPLIFIER ASSEMBLY

(See Page 8-15)


05340-60002
A-
-2
8588
TP1
TP2
TP3
TP4
C8
R15
R17
R16
C10
L2
C13
L4
C15
R26
R28
CR7
C16
R13
R9
R8
CR1
CR3
CR4
CR2
R14
R25
CR6
CR8
C14
CR9
R27
R11
R12
C6
B
C
E
Q1
Q3
Q2
Q6
Q5
Q4
L3
C12
R23
C7
L1
R31
R30
R10
R5
C3
R6
R22
R19
R24
R18
R3
R2
C1
R1
C2
CR5
C11
R20
R21
C9
C5
R29
CR10
R7
C4
R4
1
15
1
6
7
8
12
13
14
15
A
F
H
J
N
P
R
S


20 MHz IF
FROM A13
DIFFERENTIAL
AMPLIFIER
20MHz
REF
FROM
A15
Q4, Q5
Q6
QUAD
DETECTOR
CR1–
CR4
AMPLIFIER
Q1
PHASE DET1
OUT TO A6
QUAD
DETECTOR
CR6–
CR9
AMPLIFIER
Q2
QUAD DET
OUT TO A5
90° PHASE
SHIFT
Q3



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN
4. SOME CIRCUIT BOARDS PRIOR TO SERIES 1532A MAY HAVE 1800 OHMS FOR R22.

REFERENCE DESIGNATIONS

A4
C1-16 CR1-10 L1-4 Q1-6 R1-31

ACTIVE ELEMENTS

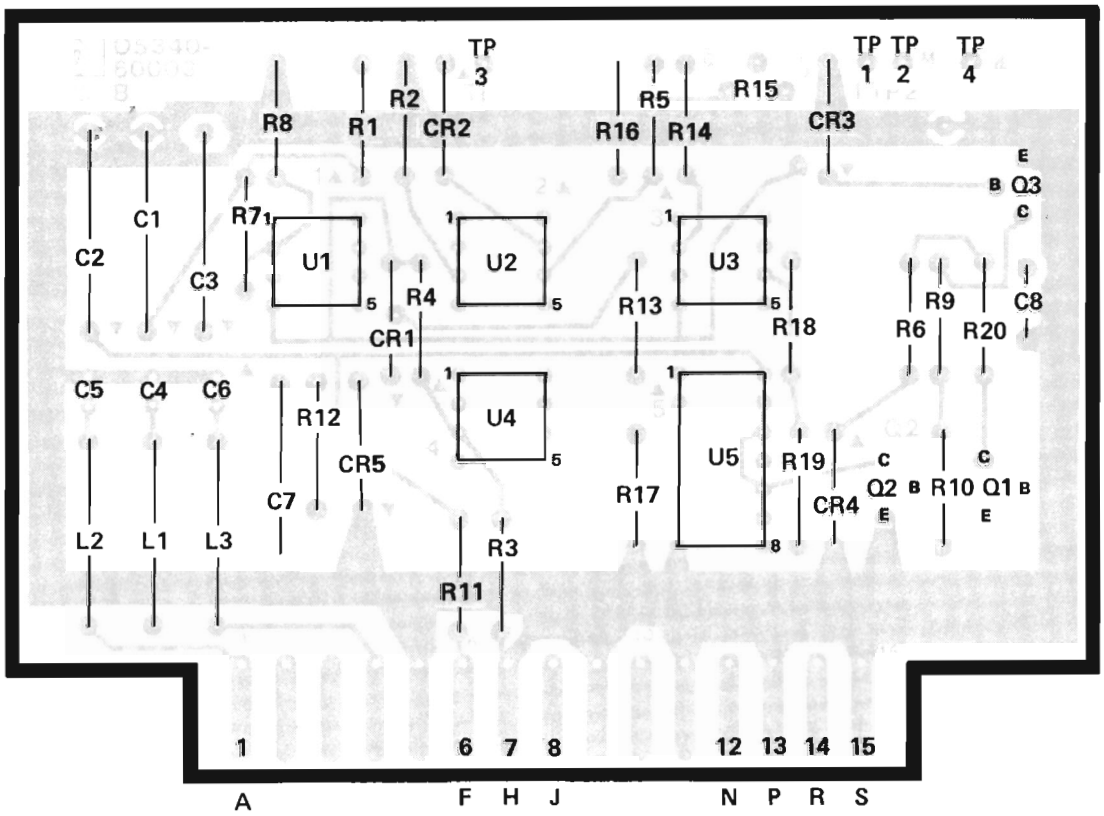
REFERENCE DESIGNATIONS	HP PART NUMBER
CR1-4, 6-9	1901-0179
CR5,10	1901-0022
Q1-3	1854-0071 2N3704
Q4-6	1854-0073 2N2857

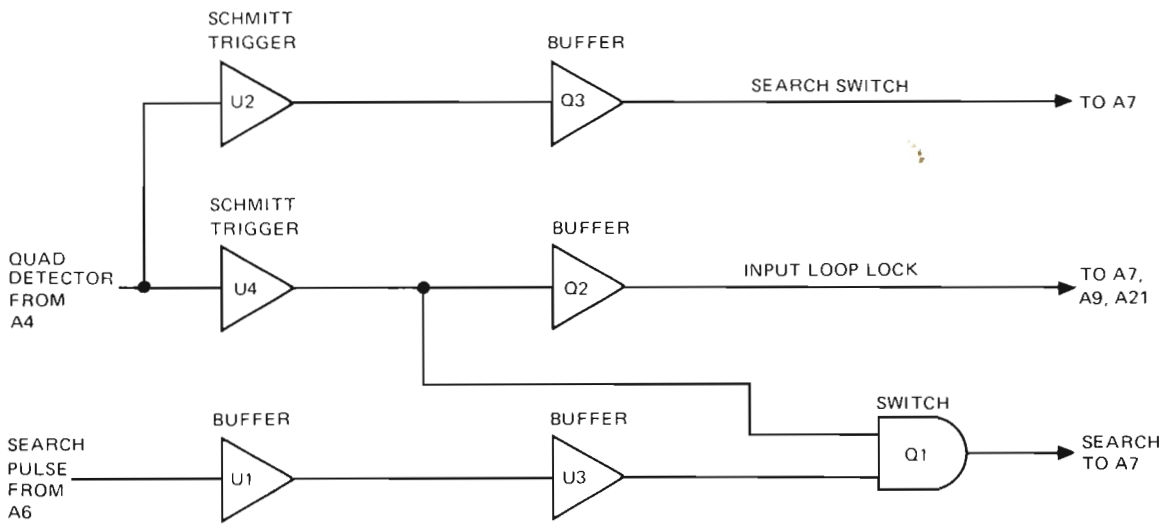
5340-D-5

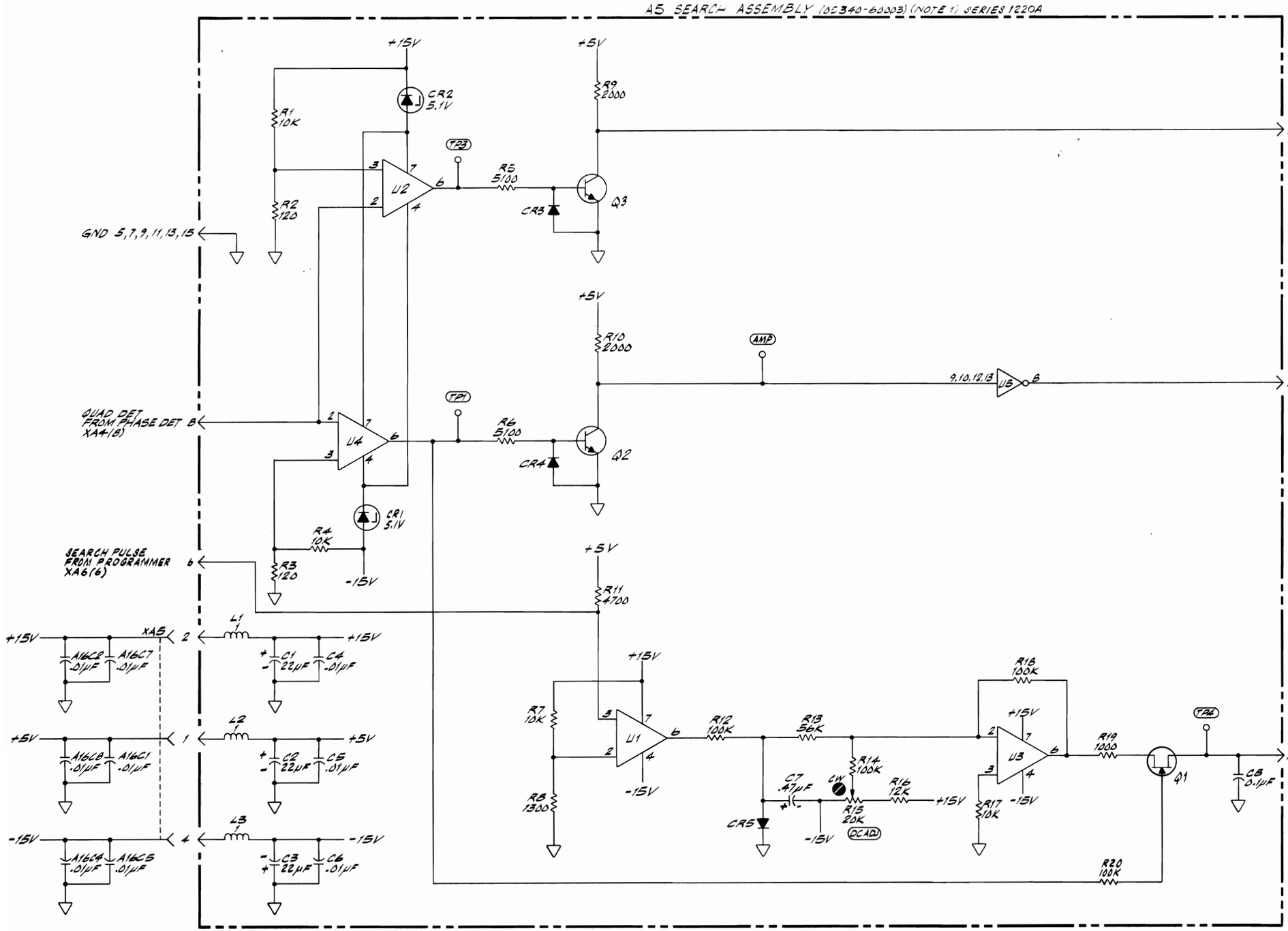
Figure 8-10. A4 Phase/Quad Detector Assembly

Figure 8-10
A4 PHASE/QUAD DETECTOR ASSEMBLY

(See Page 8-17)


TP 3
TP 1
TP 2
TP 4
R8
R1
R2
CR2
R5
R16
R14
R15
CR3
E
B Q3
C
C1
C2
C3
R7
U1
U2
U3
R4
CR1
R13
R18
R6
R9
R20
C8
C5
C4
C6
R12
CR5
C7
U4
U5
R19
CR4
C
Q2 B
E
R10
Q1 B
L2
L1
L3
R3
R11
R17
1
6
7
8
12
13
14
15
A
F
H
J
N
P
R
S


SCHMITT TRIGGER
U2
BUFFER
Q3
SEARCH SWITCH
TO A7
SCHMITT TRIGGER
U4
BUFFER
Q2
INPUT LOOP LOCK
TO A7, A9, A21
QUAD DETECTOR FROM A4
SEARCH PULSE FROM A6
BUFFER
U1
BUFFER
U3
SWITCH
Q1
SEARCH TO A7



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS.

REFERENCE DESIGNATIONS

A5
C1-8
CR1-5
L1-3
Q1-3
R1-20
U1-5

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1, 2	1902-0041
CR3, 4	1901-0025
CR5	1901-0040
Q1	1855-0052 2N4360
Q2,3	1854-0215 2N3904
U1, 2, 3, 4	1826-0073 LM741
U5 :	1820-0537

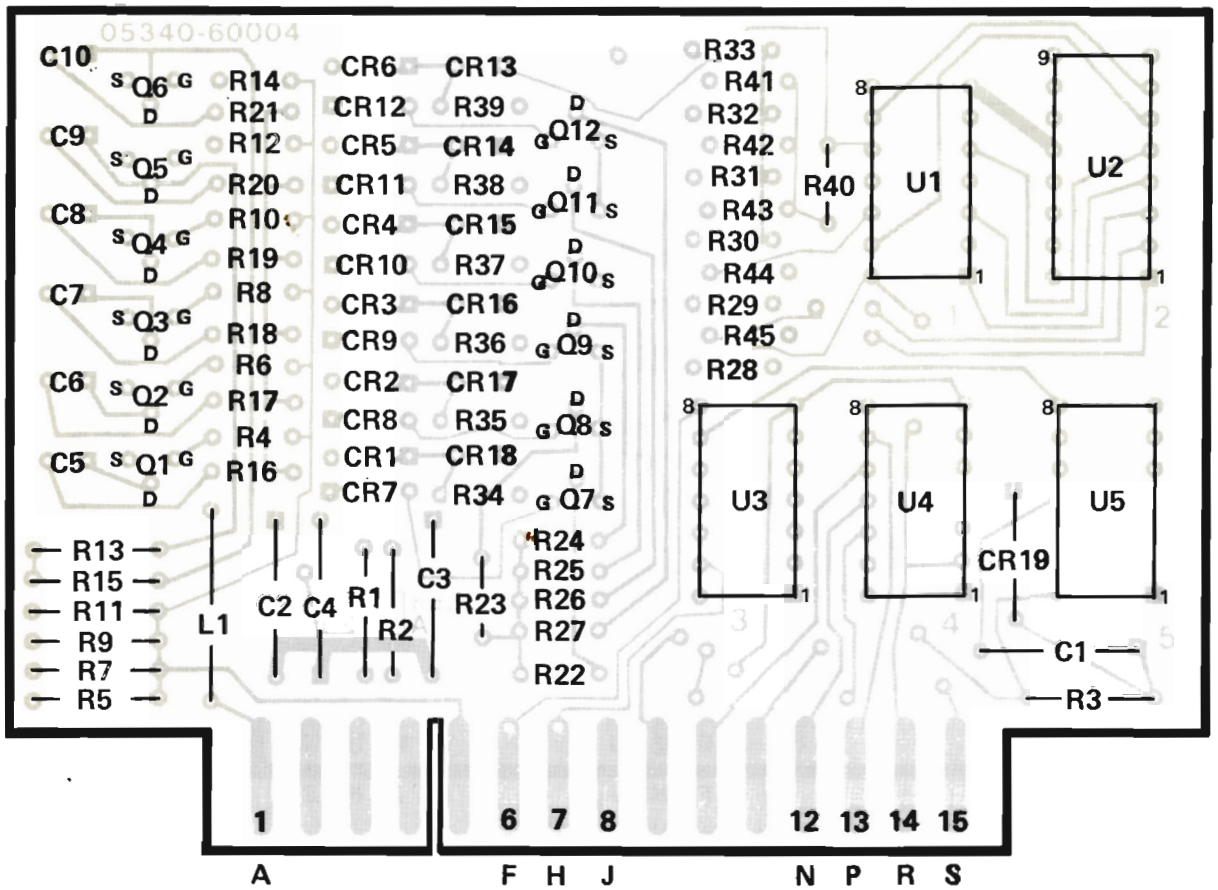
5340-D-6

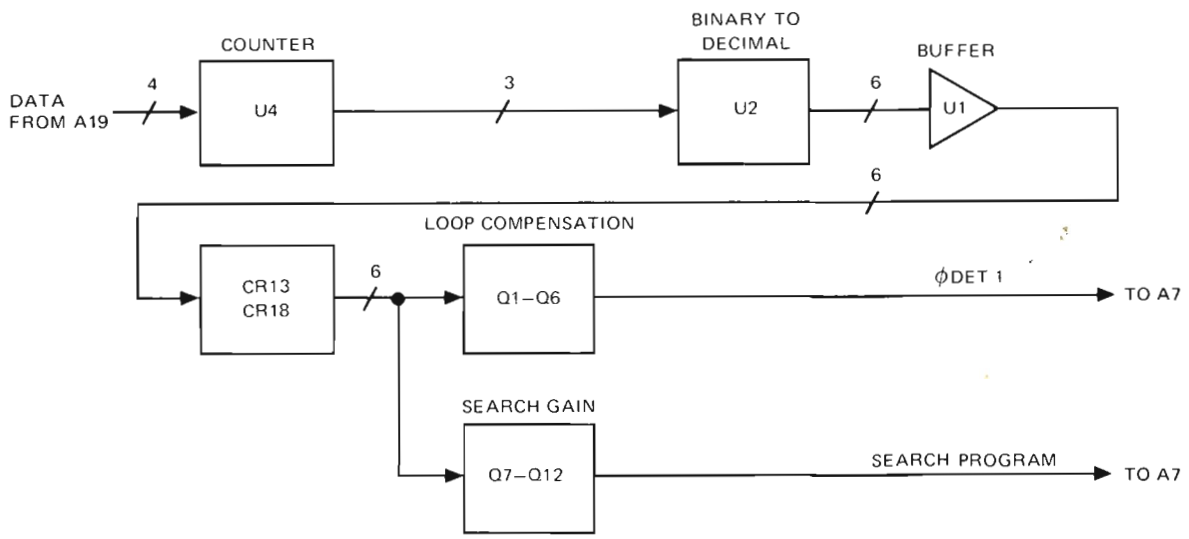
Figure 8-11. A5 Search Assembly

Figure 8-11
A5 SEARCH ASSEMBLY

(See Page 8-19)

Part of Figure 8-12. A6 Search Programmer Assembly





NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN.

REFERENCE DESIGNATIONS

A16	A6
C1, 2, 4, 5, 7, 8	C1 - 10 CR1 - 19 L1 Q1 - 12 R1 - 45 U1 - 5

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1-12, 19	1901 - 0040
CR13 - 18	1902 - 0025
Q1 - 12	1855 - 0020
U1	1820 - 0577
U2	1820 - 0214 SN7442N
U3	1820 - 0054 SN7400N
U4	1820 - 0765 SN74197N
U5	1820 - 0207

5340-D-7

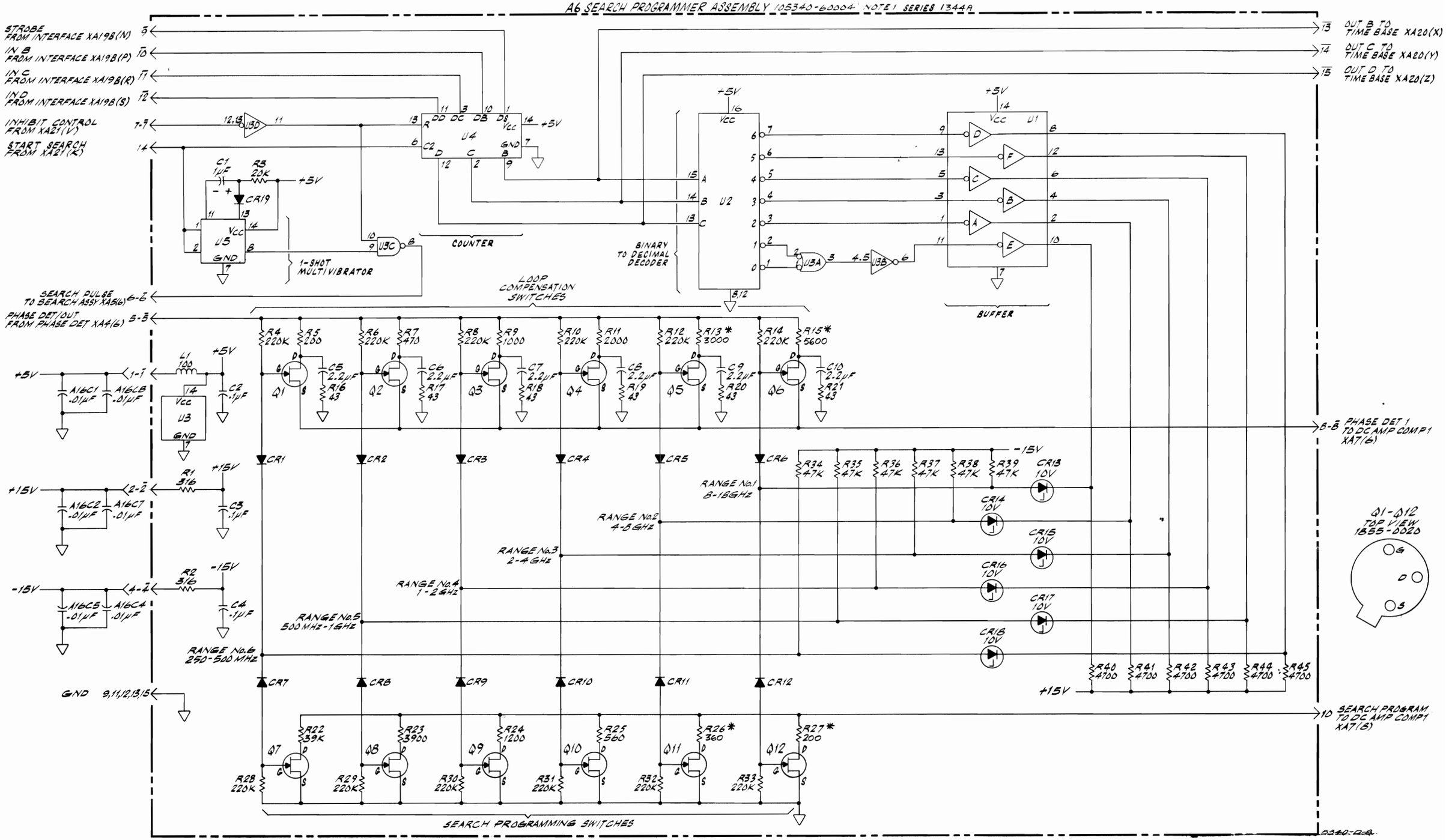
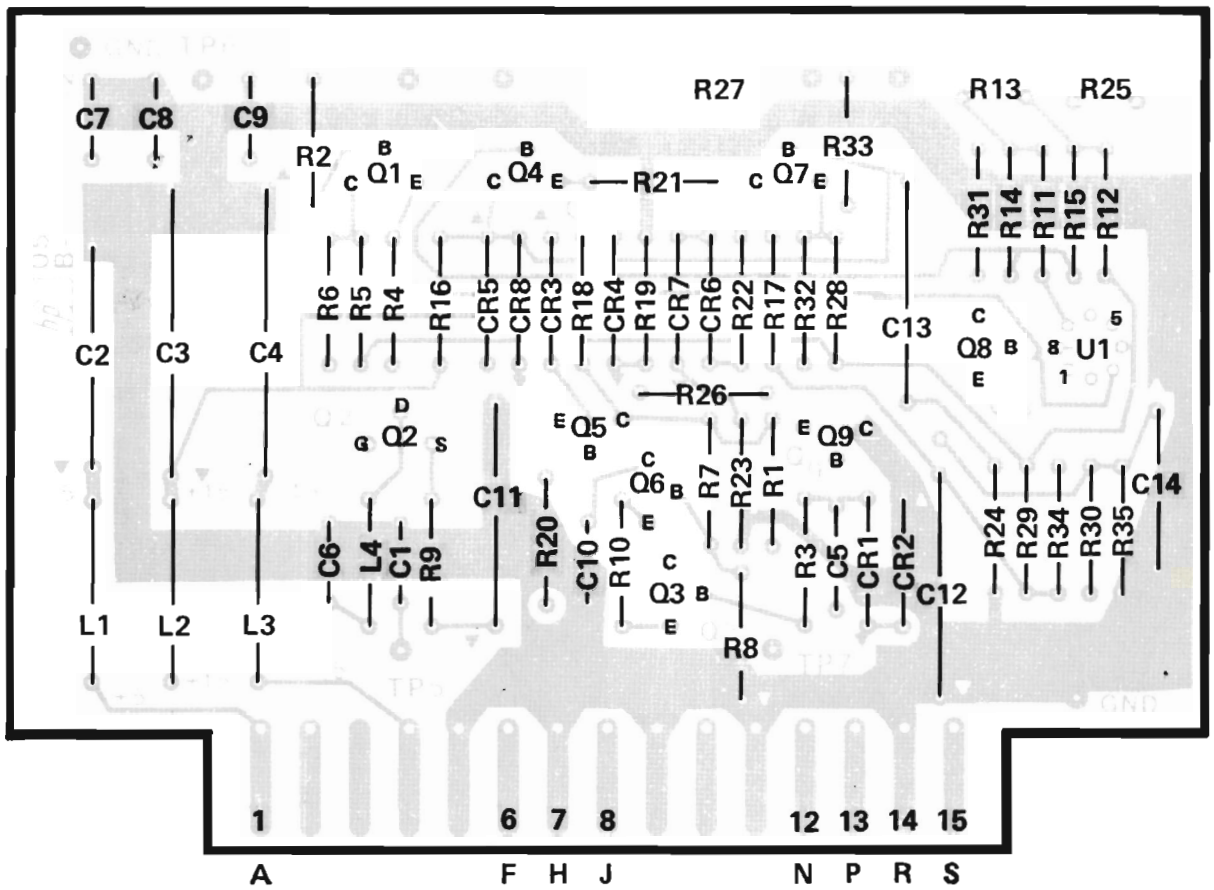
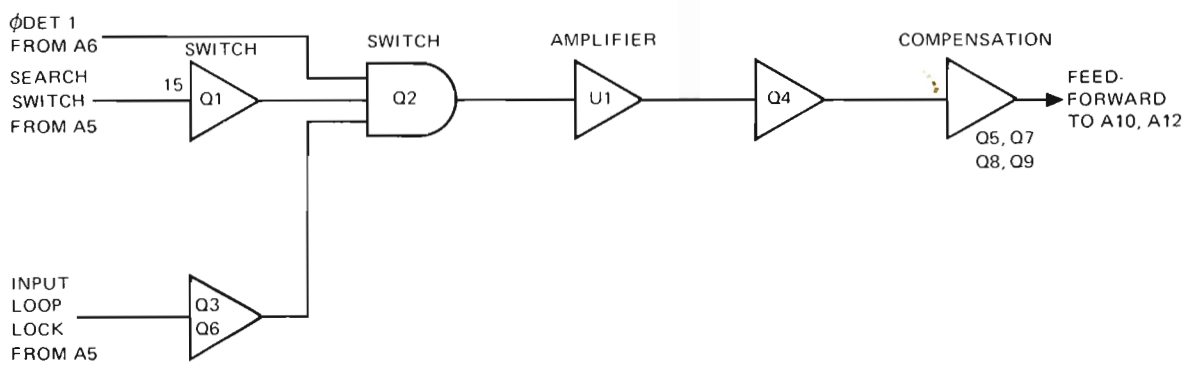


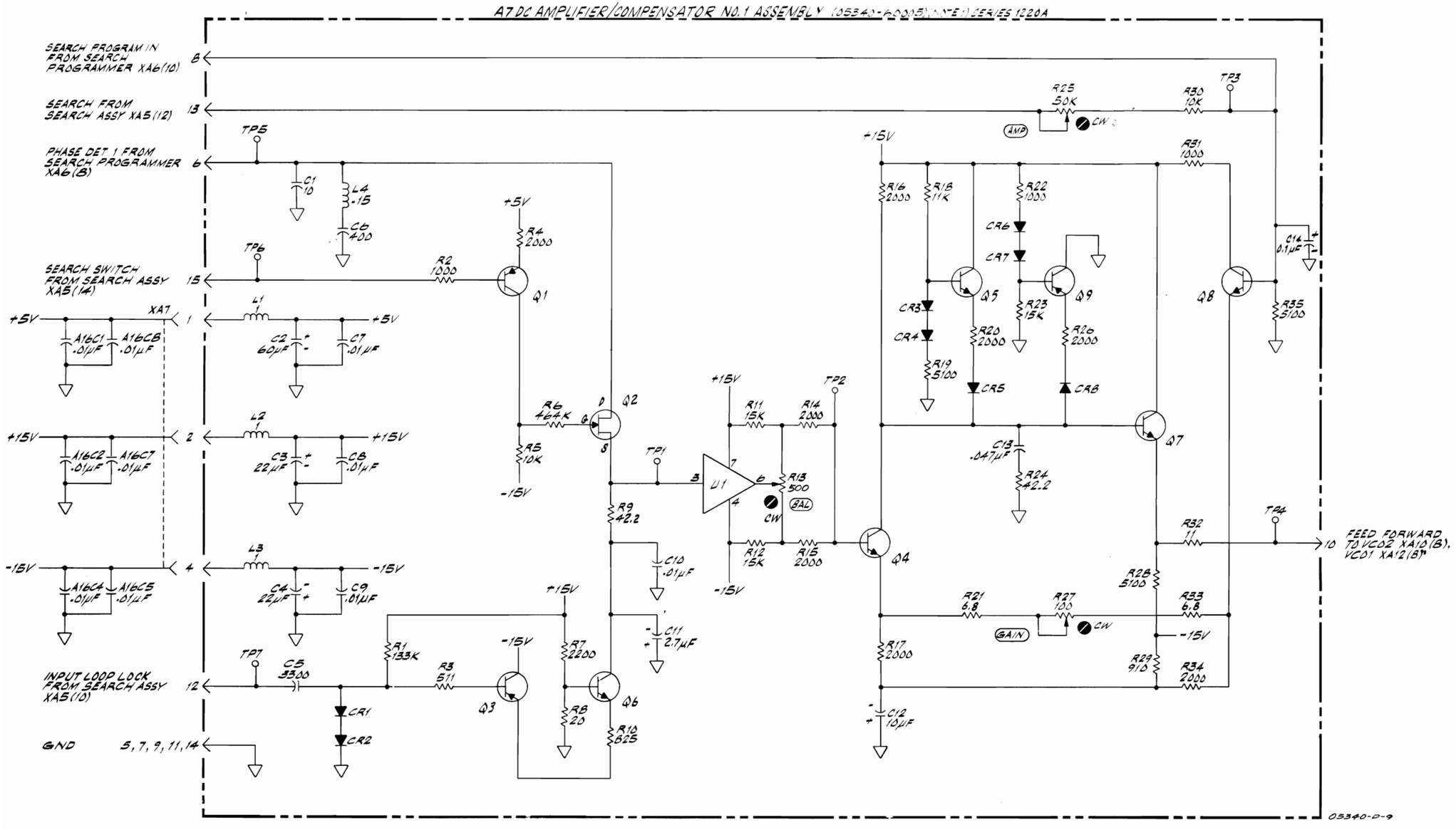
Figure 8-12. A6 Search Programmer Assembly

Figure 8-12
A6 SEARCH PROGRAMMER ASSEMBLY

(See Page 8-21)


C7
C8
C9
R2
Q1
R27
R33
Q4
R21
Q7
R13
R25
R31
R14
R11
R15
R12
R6
R5
R4
R16
CR5
CR8
CR3
R18
CR4
R19
CR7
CR6
R22
R17
R32
R28
C13
Q8
U1
C2
C3
C4
R26
Q2
Q5
Q9
Q6
R7
R23
R1
C11
C14
R20
C10
R10
C6
L4
C1
R9
Q3
R3
C5
CR1
CR2
C12
R24
R29
R34
R30
R35
L1
L2
L3
R8
1
6
7
8
12
13
14
15
A
F
H
J
N
P
R
S


ϕDET 1
FROM A6
SEARCH
SWITCH
FROM A5
SWITCH
15
Q1
SWITCH
Q2
AMPLIFIER
U1
Q4
COMPENSATION
FEED-
FORWARD
TO A10, A12
Q5, Q7
Q8, Q9
INPUT
LOOP
LOCK
FROM A5
Q3
Q6



NOTES

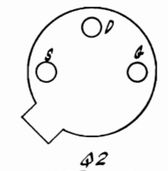
1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

A7
C1-14
CR1-8
L1-4
Q1-9
R1-35
TP1-TP7
U1

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1,2	1901-0040
CR3-8	1901-0025
Q1	1853-0020
Q2	1855-0020
Q3,Q9	1853-0036 2N3906
Q4-8	1854-0215 2N3904
U1	1826-0021 LM310H

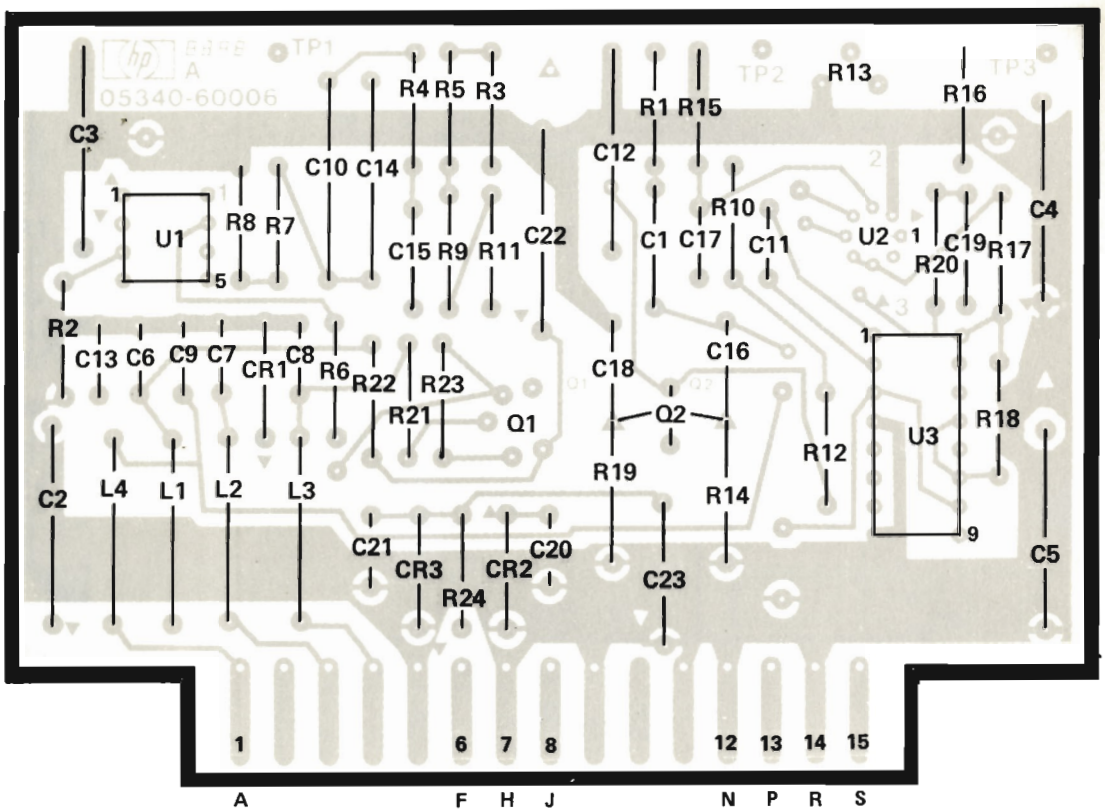


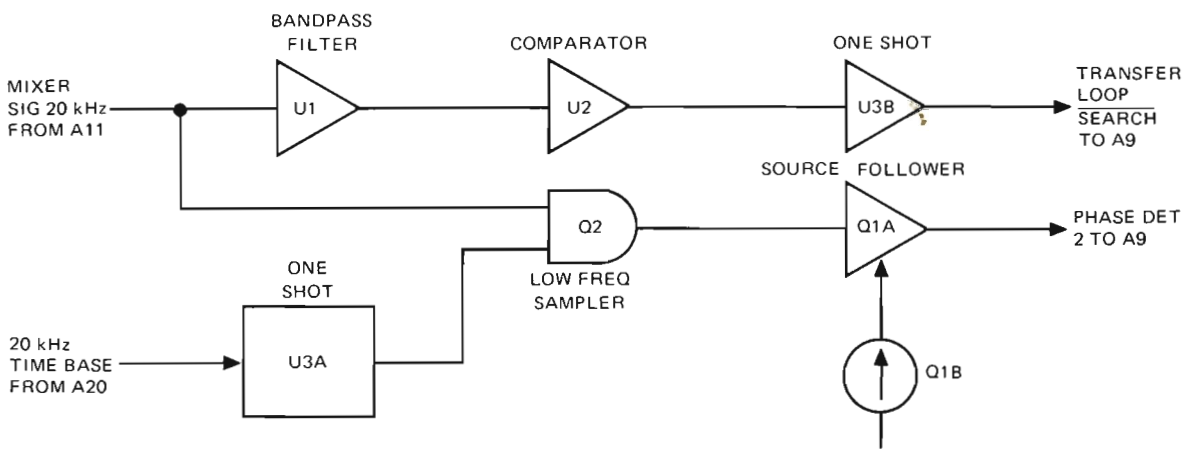
Q2
1855-0020
BOTTOM VIEW

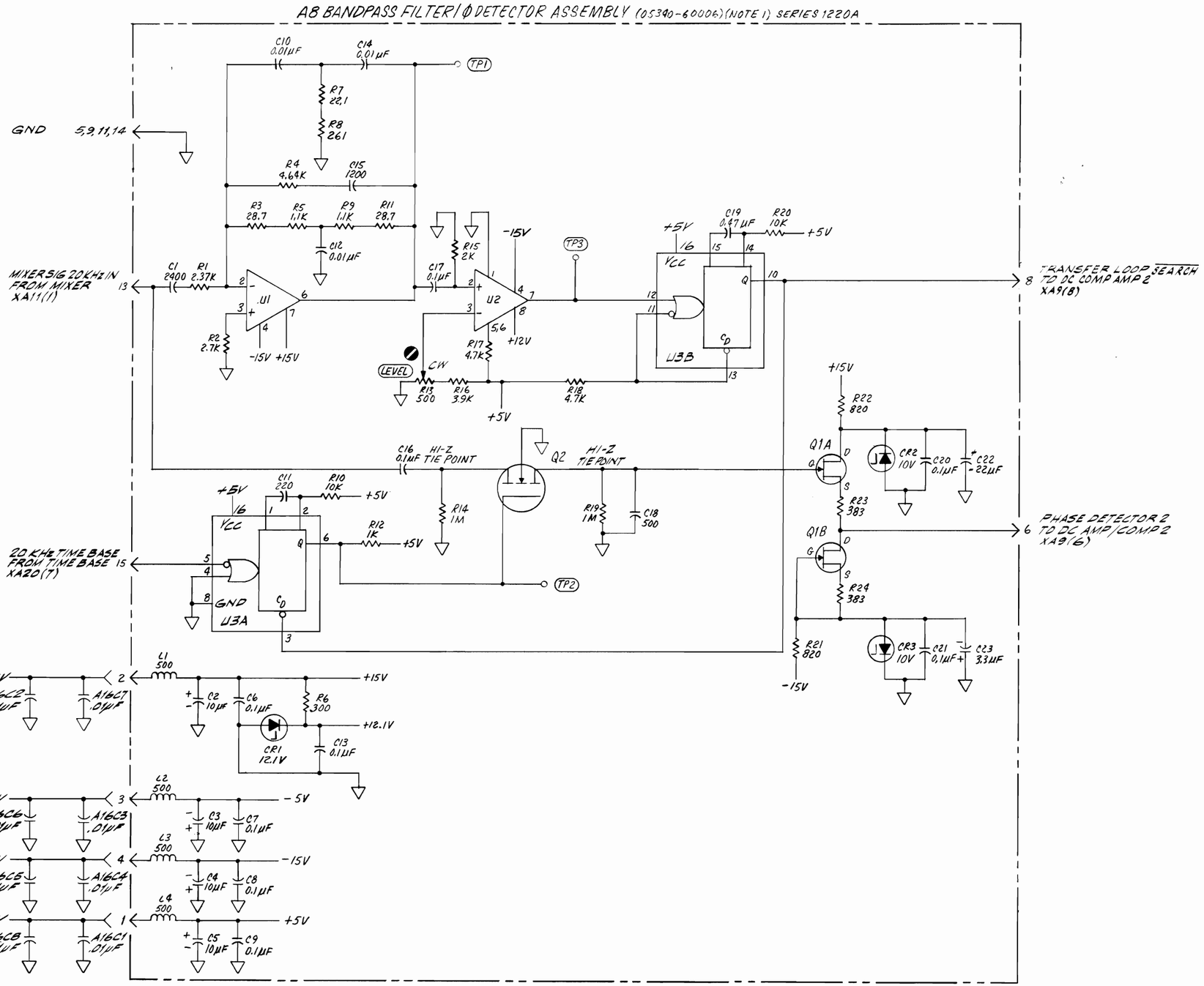
Figure 8-13. A7 DC Amplifier/Compensator No. 1 Assembly

Figure 8-13
A7 DC AMPLIFIER/COMPENSATOR NO. 1 ASSEMBLY

(See Page 8-23)


05340-60006
TP1
TP2
TP3
C3
R4 R5 R3
C10 C14
C12
R1 R15
R13
R16
C4
U1
R8 R7
C15 R9 R11
C22
C1 C17
R10
C11
U2
C19
R17
R20
R2
C13 C6 C9 C7
CR1
C8
R6
R22
R23
R21
Q1
C18
Q2
C16
U3
R18
R12
R19
R14
C2
L4
L1
L2
L3
C21
CR3
R24
CR2
C20
C23
C5
1
6 7 8
12 13 14 15
A
F H J
N P R S


BANDPASS FILTER
COMPARATOR
ONE SHOT
MIXER SIG 20 kHz FROM A11
U1
U2
U3B
TRANSFER LOOP SEARCH TO A9
SOURCE FOLLOWER
Q2
Q1A
PHASE DET 2 TO A9
ONE SHOT
LOW FREQ SAMPLER
20 kHz TIME BASE FROM A20
U3A
Q1B



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS;

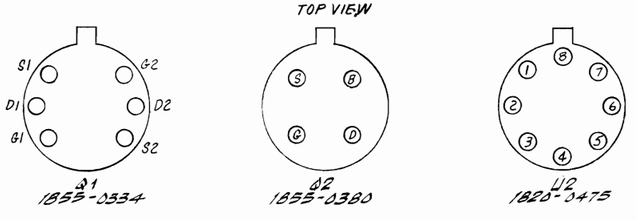
REFERENCE DESIGNATIONS

A8
C1-23
CR1-3
L1-4
Q1, 2
R1-24
U1-3

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1	1902-3162
CR2,3	1902-0025
Q1	1855-0334 DN377
Q2	1855-0330 2N4351
U1	1820-0073 LM741
U2	1820-0475 LM306H
U3	1820-0515 9602

TOP VIEW

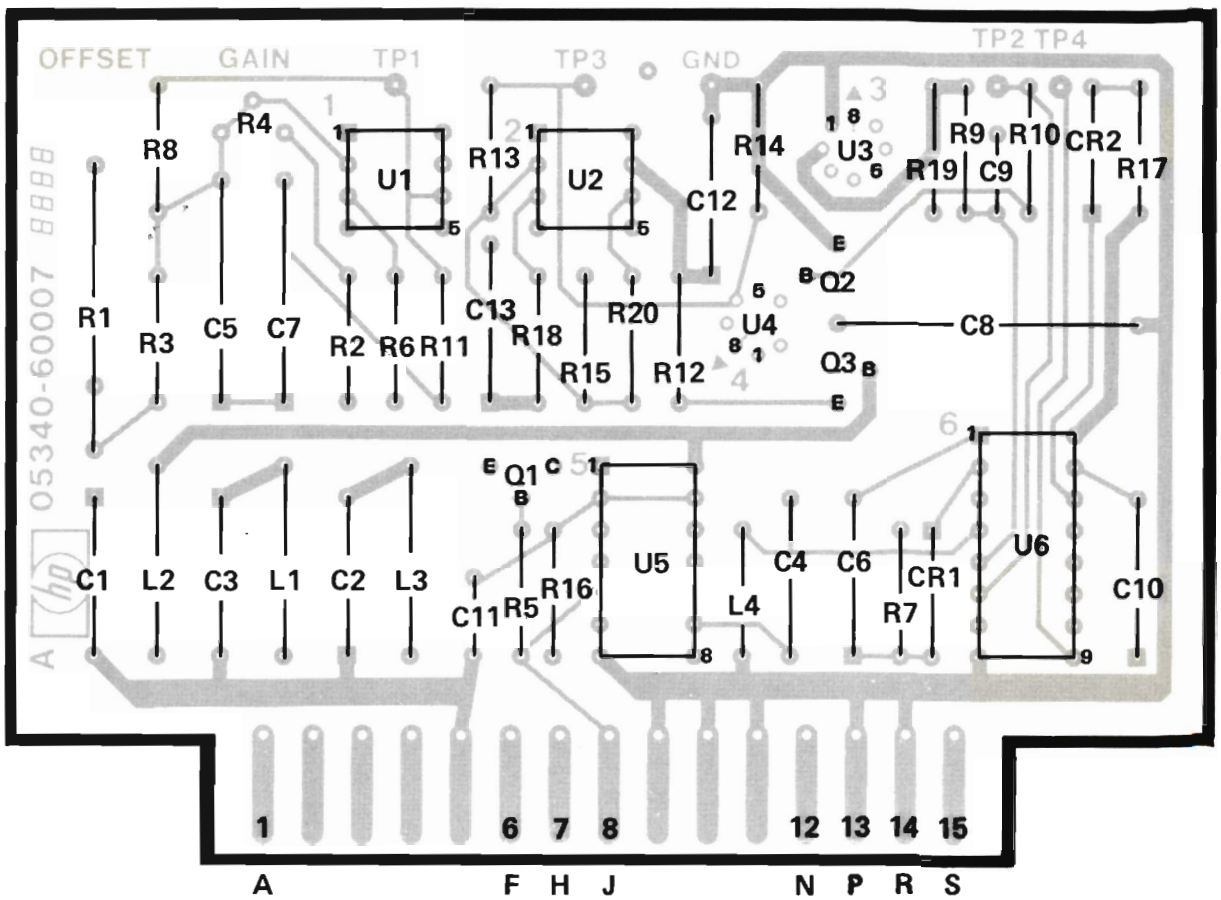


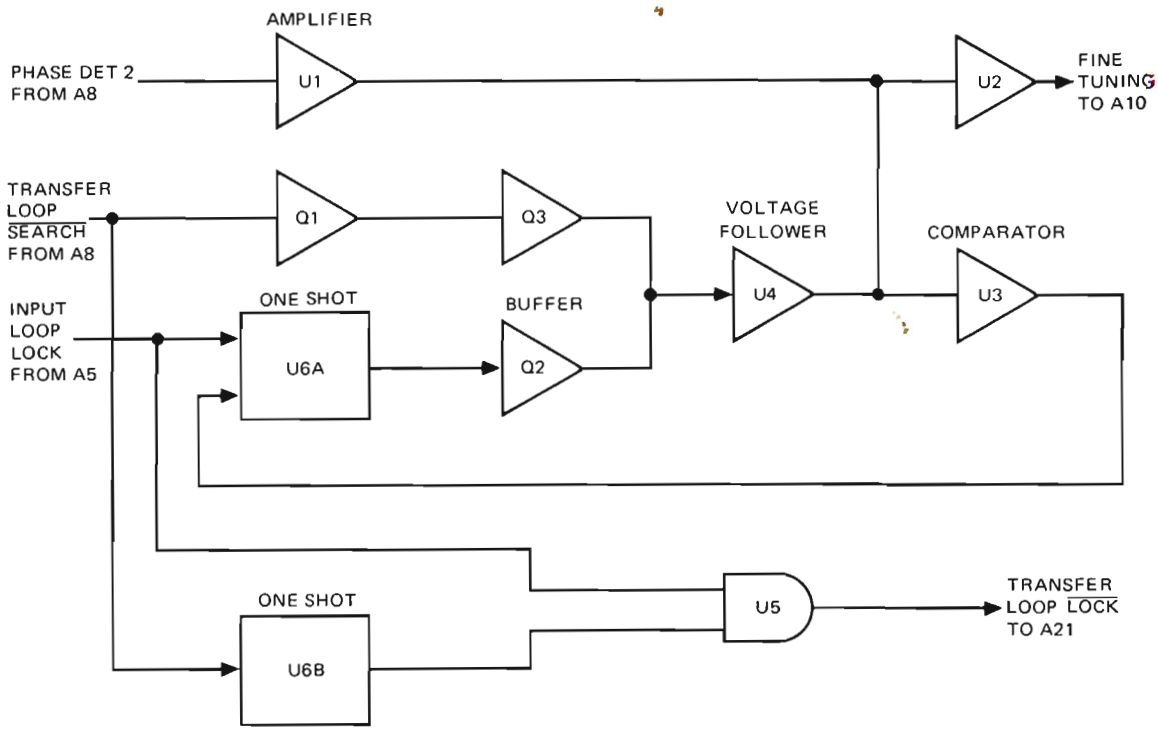
5340-D-10

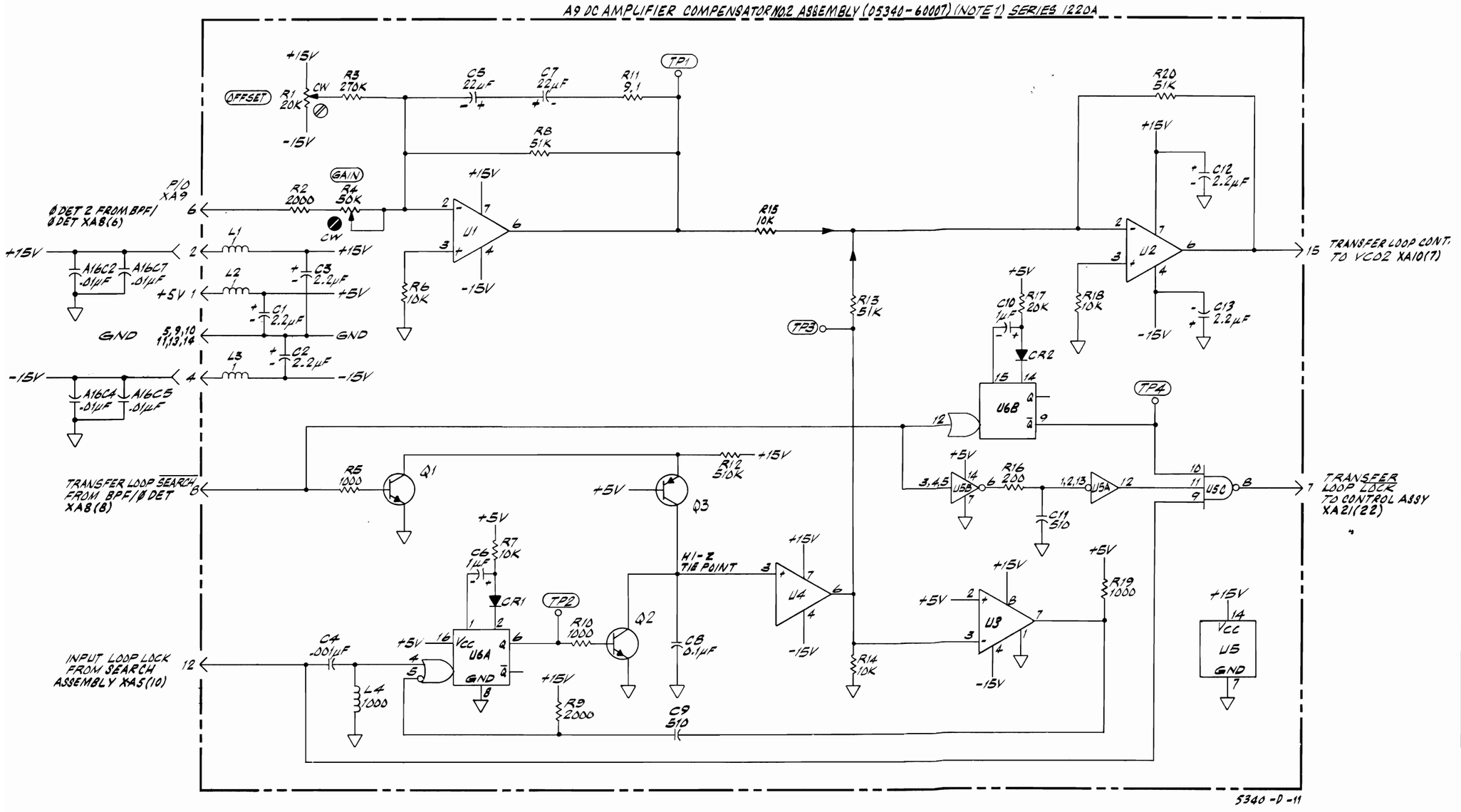
Figure 8-14. A8 Bandpass Filters/ϕ Detector Assembly

Figure 8-14
A8 BANDPASS FILTERS/ϕ DETECTOR ASSEMBLY

(See Page 8-25)


OFFSET
GAIN
TP1
TP3
GND
TP2 TP4
05340-60007
R8
R4
U1
R13
U2
C12
R14
U3
R9
R10
CR2
R19
C9
R17
R1
R3
C5
C7
R2
R6
R11
C13
R18
R15
R20
R12
Q2
U4
C8
Q3
Q1
U5
U6
C1
L2
C3
L1
C2
L3
C11
R5
R16
L4
C4
C6
R7
CR1
C10
1
6
7
8
12
13
14
15
A
F
H
J
N
P
R
S


AMPLIFIER
PHASE DET 2
FROM A8
U1
U2
FINE
TUNING
TO A10
TRANSFER
LOOP
SEARCH
FROM A8
Q1
Q3
VOLTAGE
FOLLOWER
COMPARATOR
INPUT
LOOP
LOCK
FROM A5
ONE SHOT
U6A
BUFFER
Q2
U4
U3
ONE SHOT
U6B
U5
TRANSFER
LOOP LOCK
TO A21



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;

REFERENCE DESIGNATIONS

A9
C1-13 CR1, 2 L1-4 Q1-3 R1-20 U1-6

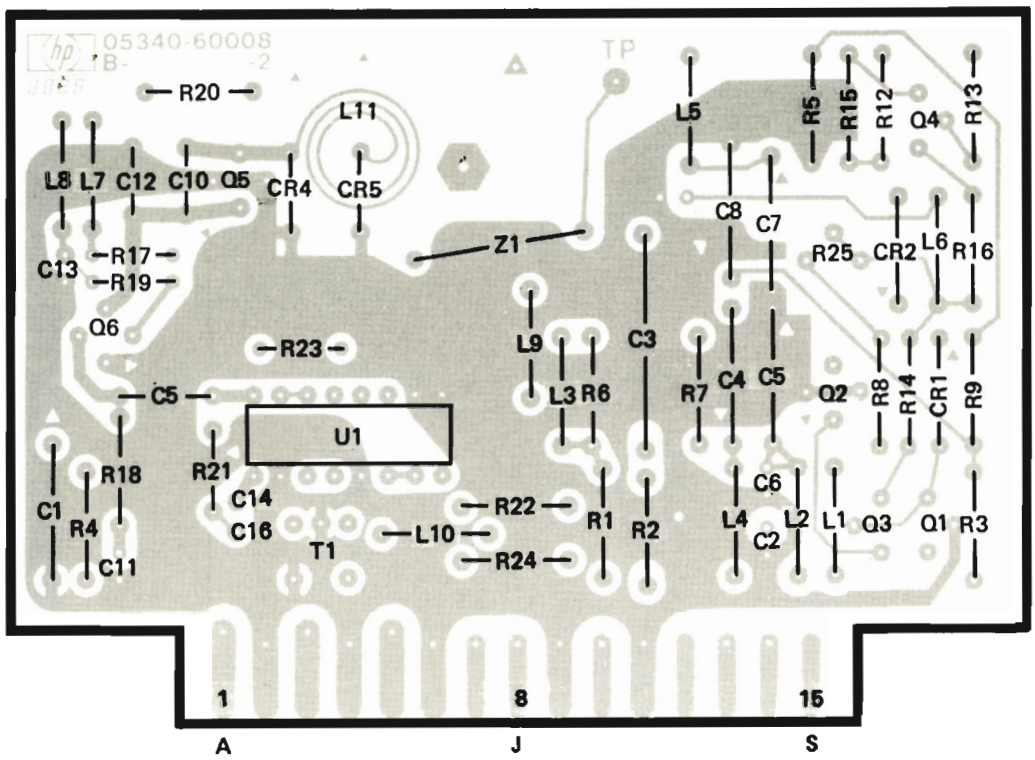
ACTIVE ELEMENTS

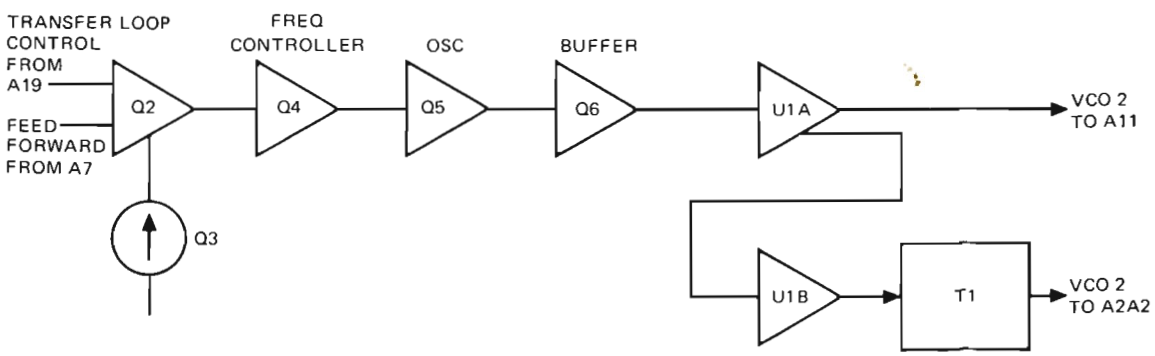
REFERENCE DESIGNATIONS	H.P. PART NUMBERS
CR1, 2	1901-0040
Q1, 2	1854-0215 2N3904
Q3	1853-0036 2N3906
U1, 2	1826-0073 LM741
U3	1826-0026 LM311H
U4	1826-0021 LM310H
U5	1820-0068 SN7410N
U6	1820-0515 9602

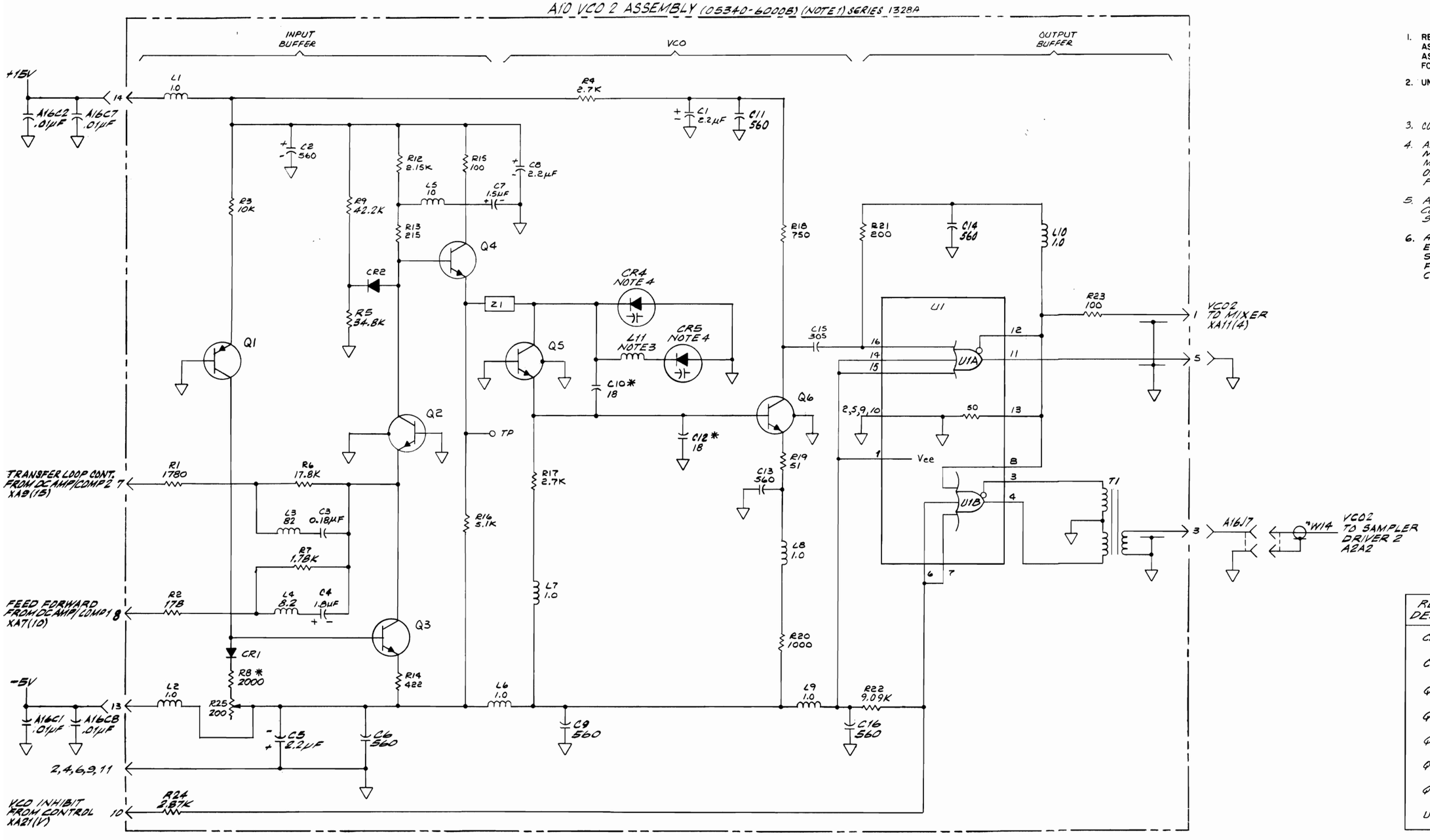
Figure 8-15. A9 DC Amplifier/Compensator No. 2 Assembly

Figure 8-15
A9 DC AMPLIFIER/COMPENSATOR NO. 2 ASSEMBLY

(See Page 8-27)


05340-60008
B- -2
TP
R20
L11
L8 L7 C12 C10 Q5 CR4 CR5
L5
R5 R15 R12 Q4 R13
C8 C7
Z1
C13 R17 R19
R25 CR2 L6 R16
Q6
R23
L9 C3
L3 R6
R7 C4 C5
Q2
R8 R14 CR1 R9
C5
U1
R18
R21
C14
C16
C6
C1 R4 C11
T1
L10
R22
R24
R1 R2
L4 C2 L2 L1 Q3 Q1 R3
1
8
15
A
J
S


TRANSFER LOOP CONTROL FROM A19
FEED FORWARD FROM A7
Q2
Q3
FREQ CONTROLLER
Q4
OSC
Q5
BUFFER
Q6
U1A
VCO 2 TO A11
U1B
T1
VCO 2 TO A2A2



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES
3. COIL IS PRINTED ON PC BOARD
4. A10CR4 & CR5 AND A12CR4 & CR5 MUST BE REPLACED AS A MATCHED QUAD SET i.e. WHEN ANY ONE DIODE IS REPLACED, ALL FOUR MUST BE INSTALLED.
5. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN.
6. A10C10 AND A10C12 MUST BE EQUAL, ≥ 12 PF, ≤ 24PF. SELECTION MATCHES VCO FREQUENCY RANGE TO VARACTOR CHARACTERISTICS.

REFERENCE DESIGNATIONS

A10
C1-16 CR1,2,4,5 L1-10 Q1-6 R1-9, 12-25 T1 U1 Z1

CR3, R10, R11 DELETED

ACTIVE ELEMENTS

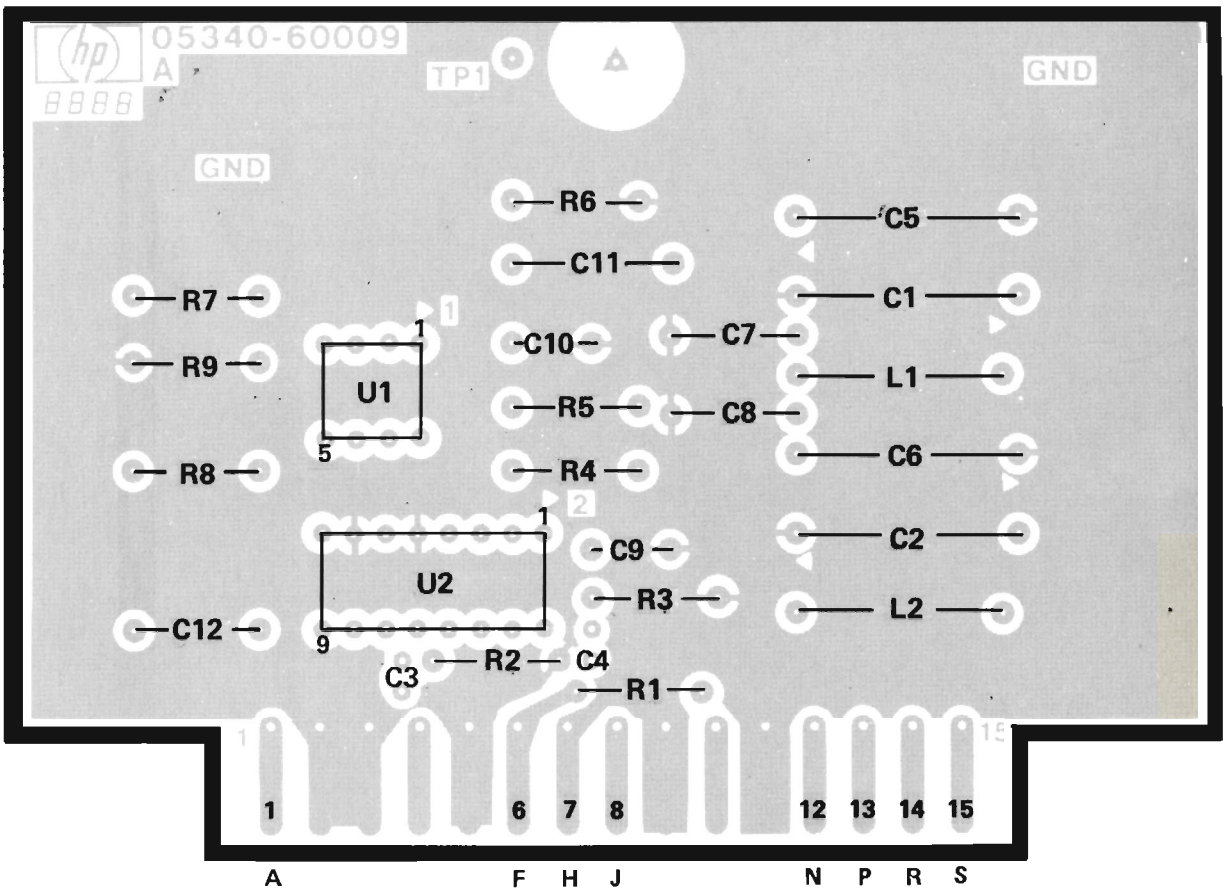
REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1, 2	1901-0040
CR4, 5	05340-80005 (SEE NOTE 4)
Q1	1853-0036 2N3906
Q2	1854-0073
Q3	1854-0583 MPSA-018
Q4	1854-0005 2N708
Q5, 6	1854-0345 2N5179
U1	1820-1179

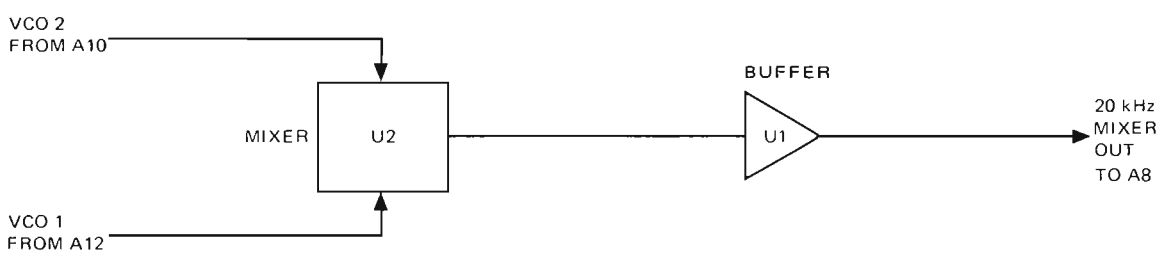
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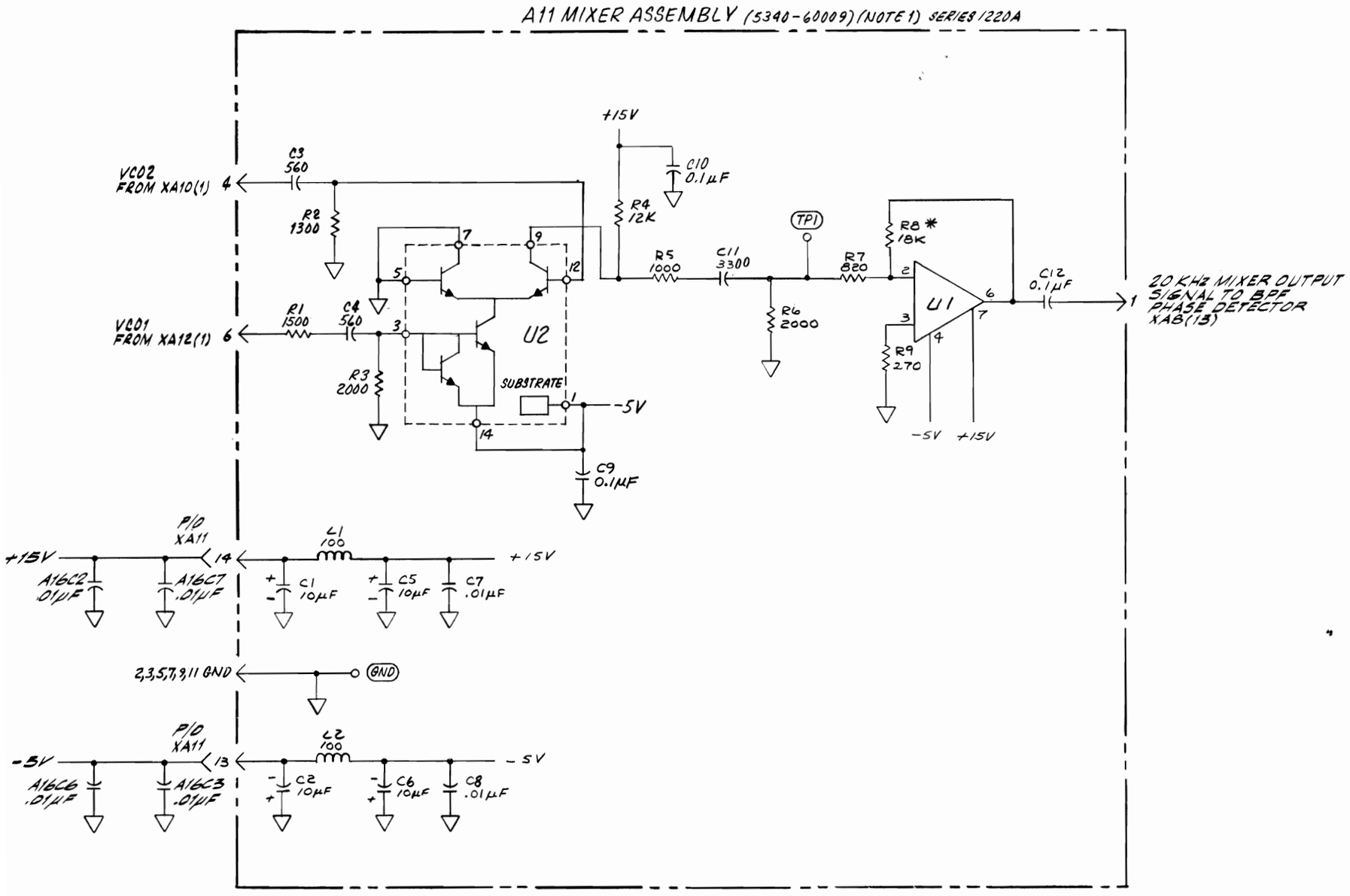
Figure 8-16. A10 VCO No. 2 Assembly

Figure 8-16
A10 VCO NO. 2 ASSEMBLY

(See Page 8-29)


05340-60009
A
TP1
GND
GND
R6
C5
C11
C1
R7
C10
C7
L1
R9
U1
R5
C8
C6
R8
R4
C9
C2
U2
R3
L2
C12
C3
R2
C4
R1
1
5
9
1
6
7
8
12
13
14
15
A
F
H
J
N
P
R
S


VCO 2
FROM A10
MIXER
U2
BUFFER
U1
20 kHz
MIXER
OUT
TO A8
VCO 1
FROM A12



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUE SHOWN.

REFERENCE DESIGNATIONS

A11
C1-12 L1,2 R1-9 U1,2

ACTIVE ELEMENTS

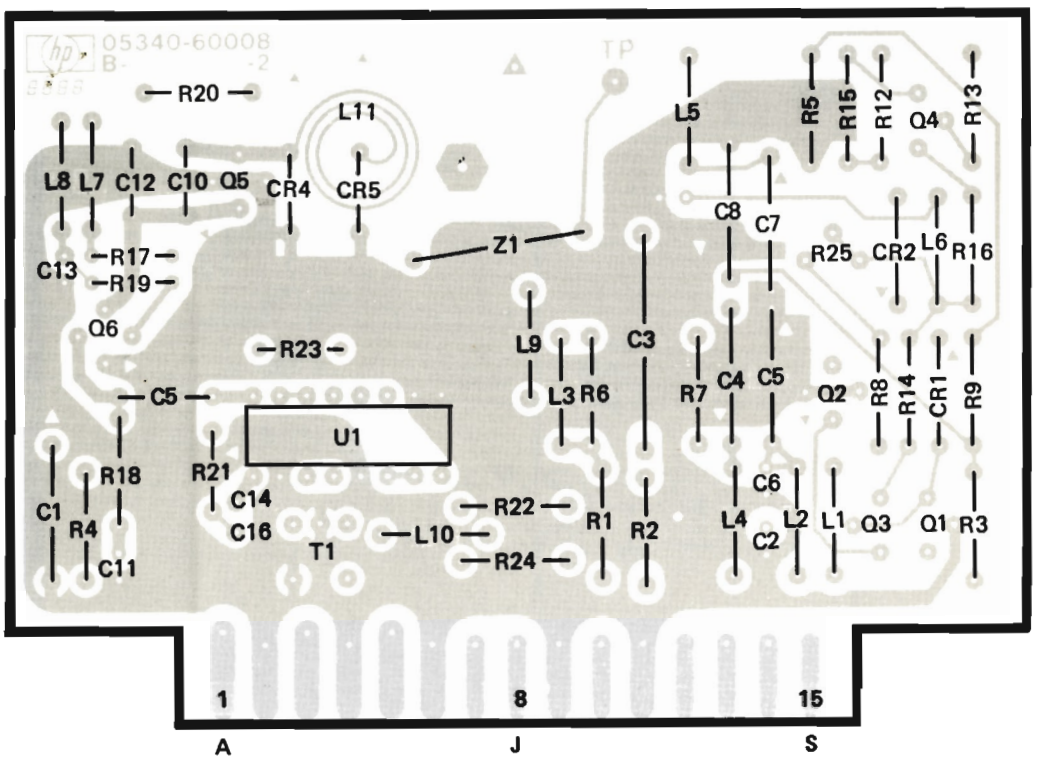
REFERENCE DESIGNATIONS	HP PART NUMBERS
U1	1826-0073
U2	1858-0018

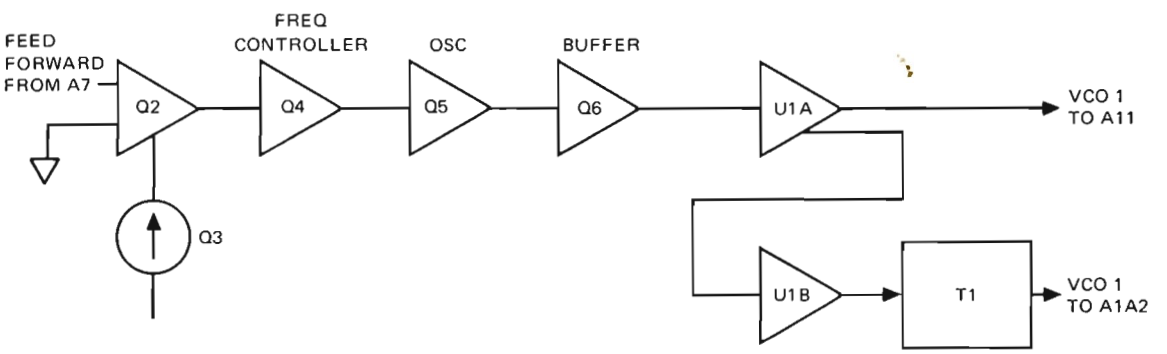
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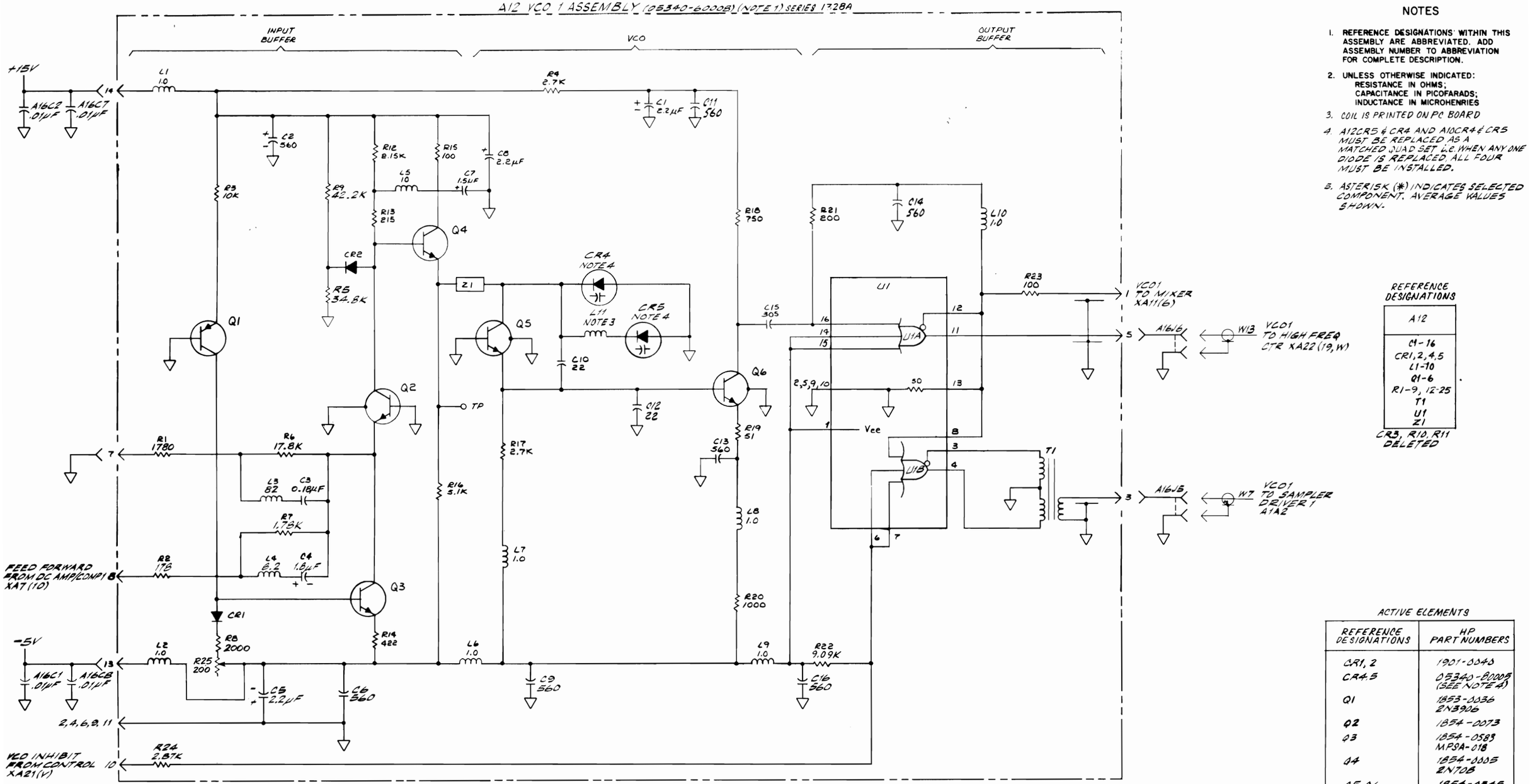
Figure 8-17. A11 Mixer Assembly

Figure 8-17
A11 MIXER ASSEMBLY

(See Page 8-31)


05340-60008
B -2
TP
R20
L11
L8 L7 C12 C10 Q5 CR4 CR5
L5
R5 R15 R12 Q4 R13
C8 C7
Z1
C13 R17 R19
R25 CR2 L6 R16
Q6
R23
L9
C3
C5
L3 R6
R7 C4 C5
Q2
R8 R14 CR1 R9
U1
R18
R21
C14
C16
C6
C1
R4
C11
R22
L10
T1
R24
R1
R2
L4
C2
L2
L1
Q3
Q1
R3
1
8
15
A
J
S


FEED FORWARD FROM A7
Q2
FREQ CONTROLLER
Q4
OSC
Q5
BUFFER
Q6
U1A
VCO 1 TO A11
Q3
U1B
T1
VCO 1 TO A1A2



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES
3. COIL IS PRINTED ON PC BOARD
4. A12CR5 & CR4 AND A10CR4 & CR5 MUST BE REPLACED AS A MATCHED QUAD SET I.E. WHEN ANY ONE DIODE IS REPLACED, ALL FOUR MUST BE INSTALLED.
5. ASTERISK (*) INDICATES SELECTED COMPONENT. AVERAGE VALUES SHOWN.

REFERENCE DESIGNATIONS

A12
C1-16 CR1,2,4,5 L1-10 Q1-6 R1-9, 12-25 T1 U1 Z1

CR3, R10, R11 DELETED

ACTIVE ELEMENTS

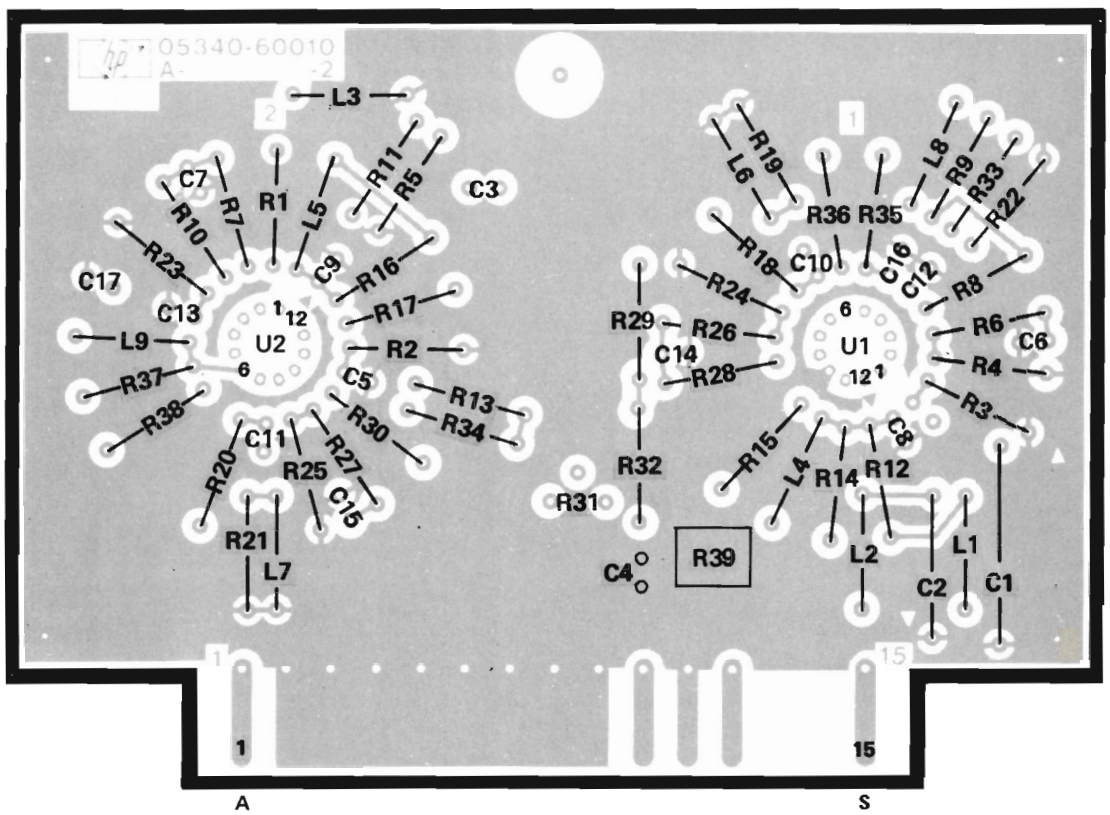
REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1, 2	1901-0040
CR4,5	05340-80005 (SEE NOTE 4)
Q1	1853-0036 2N3906
Q2	1854-0071
Q3	1854-0589 MPSA-018
Q4	1854-0035 2N708
Q5, Q6	1854-0345 2N5179
U1	1820-1179

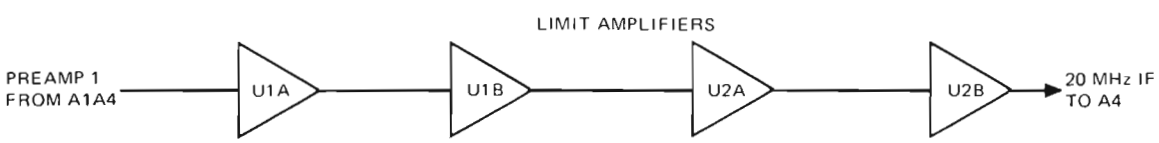
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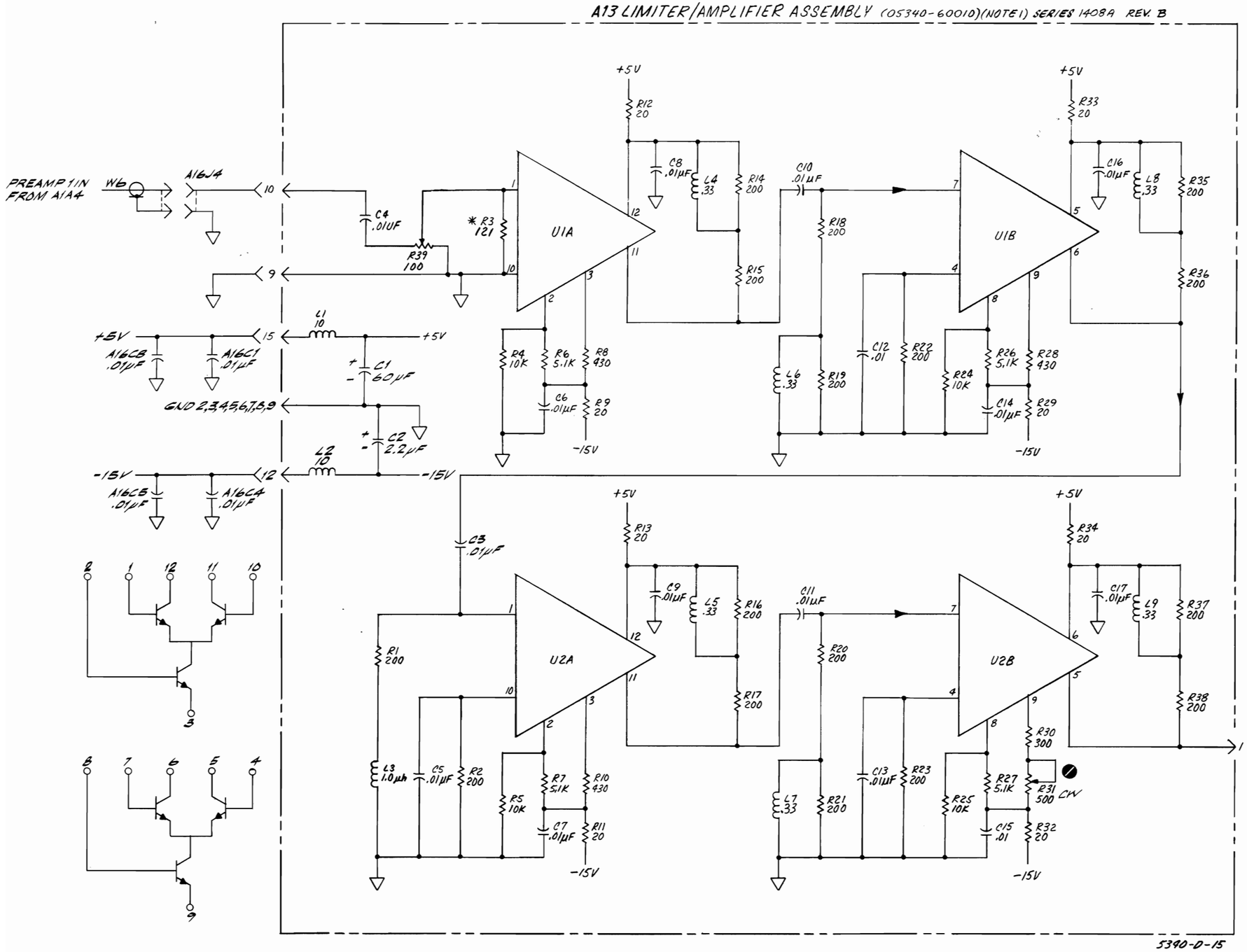
Figure 8-18. A12 VCO No. 1 Assembly

Figure 8-18
A12 VCO NO. 1 ASSEMBLY

(See Page 8-33)


05340-60010
A -2
L3
C7
R7
R1
L5
R11
R5
C3
R10
R23
C9
R16
C17
C13
R17
L9
U2
R2
R37
C5
R13
R38
R30
R34
C11
R27
R20
R25
C15
R21
L7
R29
R19
L6
R36
R35
L8
R9
R33
R22
R18
C10
C16
C12
R8
R24
R26
R6
C14
U1
C6
R28
R4
R3
C8
R15
L4
R14
R12
R32
R31
R39
C4
L2
L1
C2
C1
1
15
A
S


LIMIT AMPLIFIERS
PREAMP 1
FROM A1A4
U1A
U1B
U2A
U2B
20 MHz IF
TO A4



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUE SHOWN.

REFERENCE DESIGNATIONS

A13
C1-17 L1-9 R1-38 U1,2

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
U1,2	1858-0004

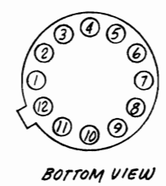
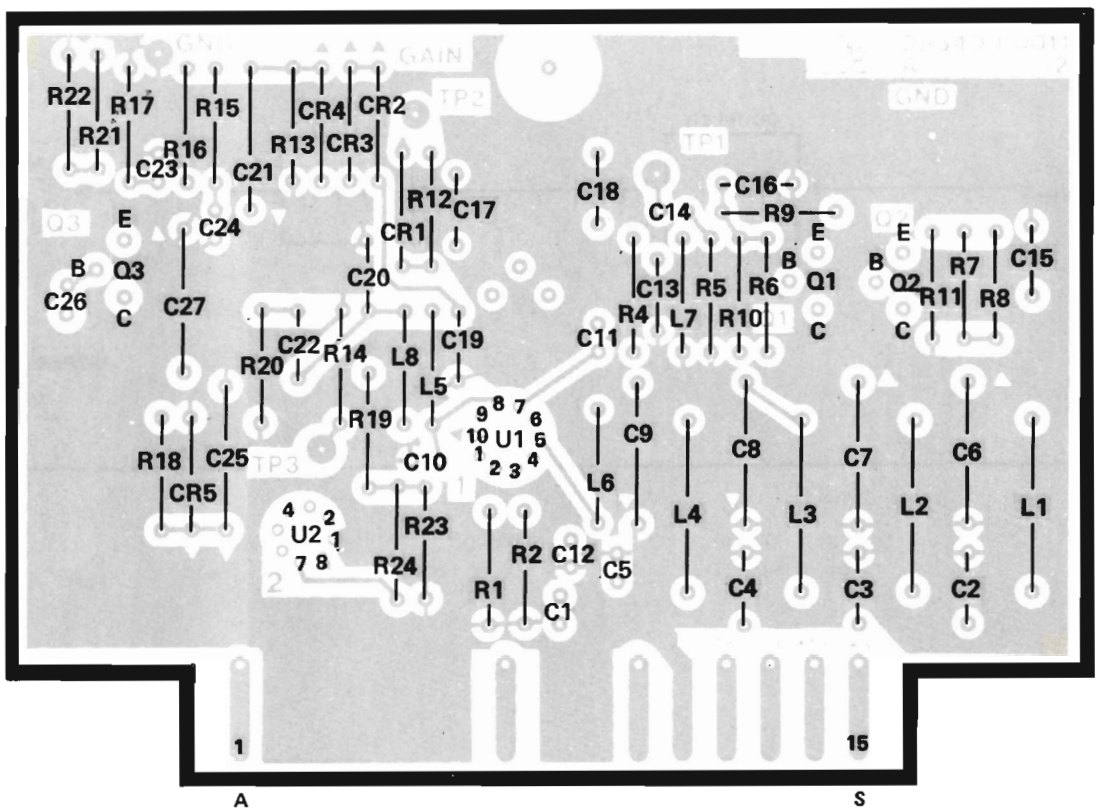
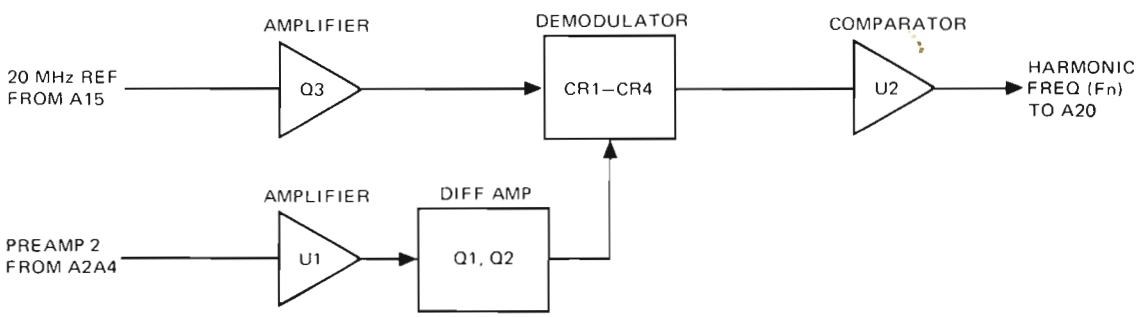


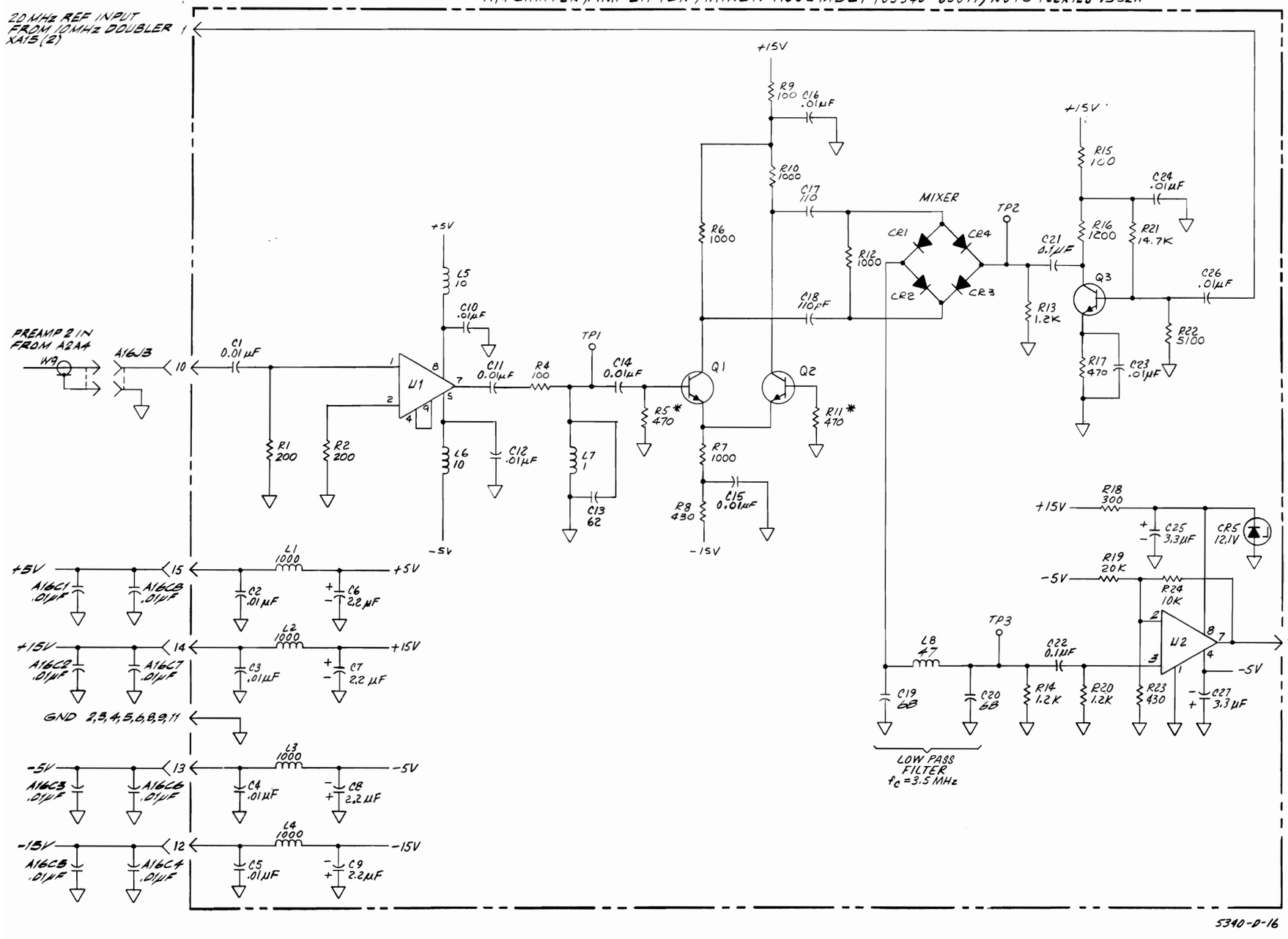
Figure 8-19. A13 Limiter/Amplifier Assembly

Figure 8-19
A13 LIMITER/AMPLIFIER ASSEMBLY

(See Page 8-35)


R22
R17
R21
R15
R16
C23
C21
CR4
CR2
R13
CR3
R12
C17
CR1
C20
C18
C16
C14
R9
C24
Q3
C26
C27
C22
R20
R14
L8
C19
L5
R19
C10
R18
C25
CR5
R23
R24
U2
R1
R2
C12
C1
C5
C11
R4
L7
R10
C13
R5
R6
Q1
Q2
R11
R7
R8
C15
C9
C8
C7
C6
L6
L4
L3
L2
L1
C4
C3
C2
GAIN
GND
TP1
TP2
TP3
1
15
A
S


AMPLIFIER
DEMODULATOR
COMPARATOR
20 MHz REF
FROM A15
Q3
CR1–CR4
U2
HARMONIC
FREQ (Fn)
TO A20
AMPLIFIER
DIFF AMP
PREAMP 2
FROM A2A4
U1
Q1, Q2



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUE SHOWN.

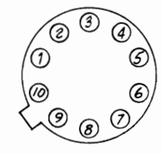
REFERENCE DESIGNATIONS

A14
C1-27 CR1-5 L1-8 Q1-3 R1,2,4-24 U1,2

R3 DELETED

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1-4	1901-0050
CR5	1902-3182
Q1-3	1854-0073
U1	1820-0270
U2	1820-0475 LM306H



BOTTOM VIEW

Figure 8-20. A14 Limiter/Amplifier/Mixer Assembly

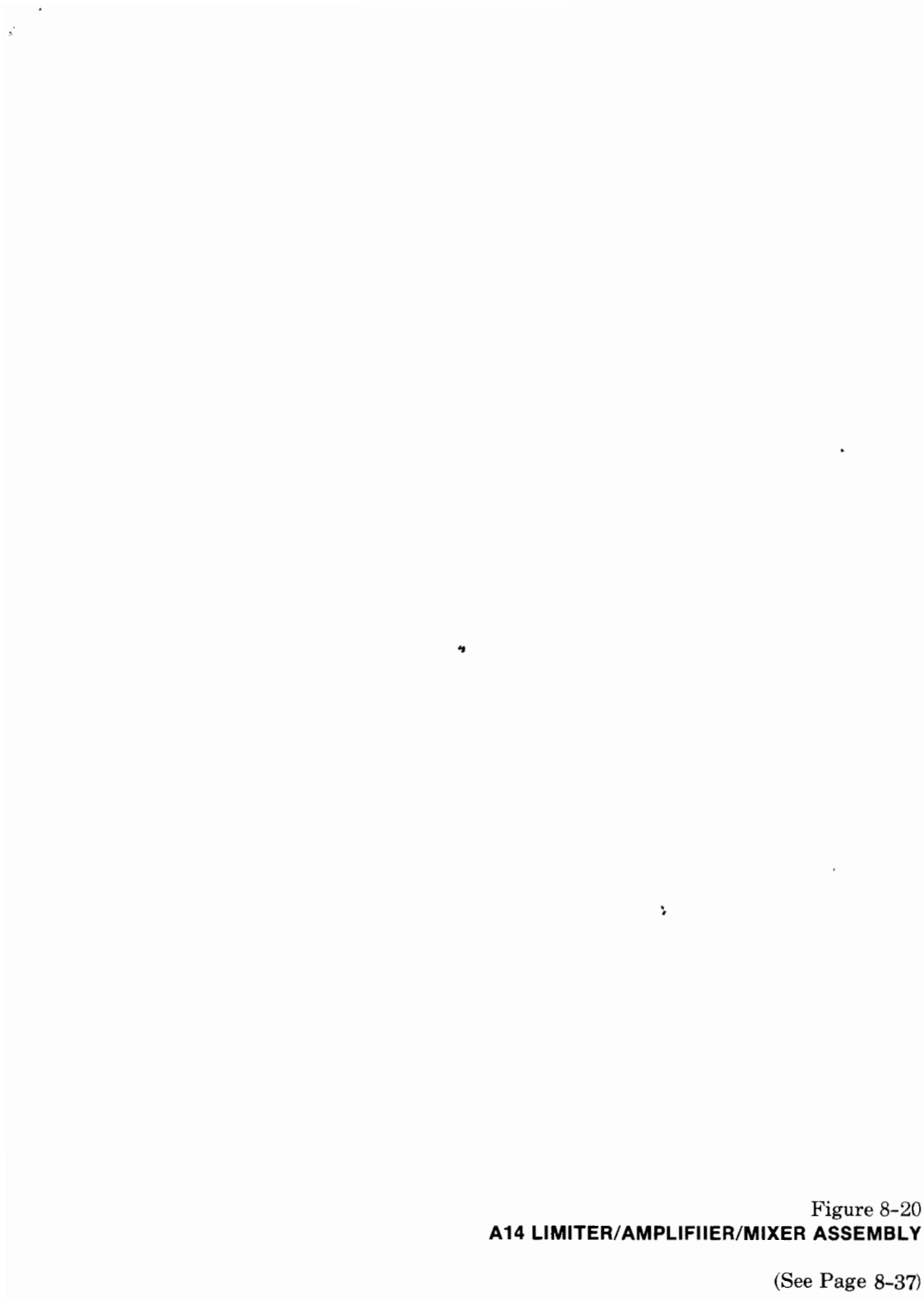
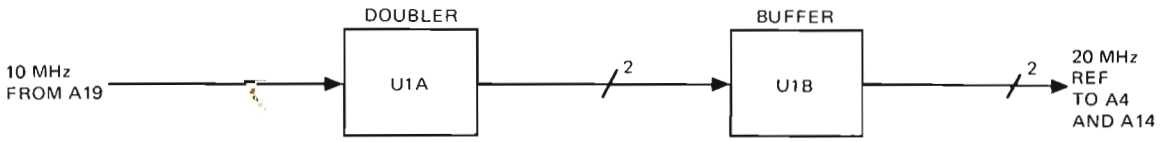
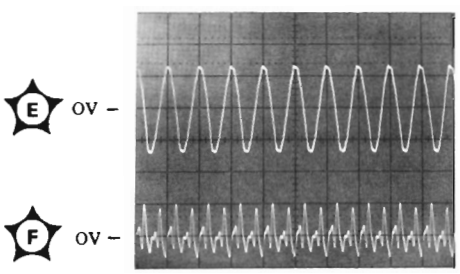


Figure 8-20
A14 LIMITER/AMPLIFIIER/MIXER ASSEMBLY

(See Page 8-37)

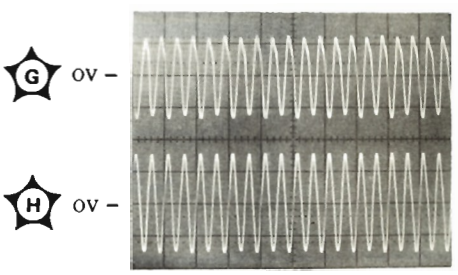
Part of Figure 8-21. A15 10 MHz Doubler Assembly





E A15C2 .1 V/cm, .1 μs/div

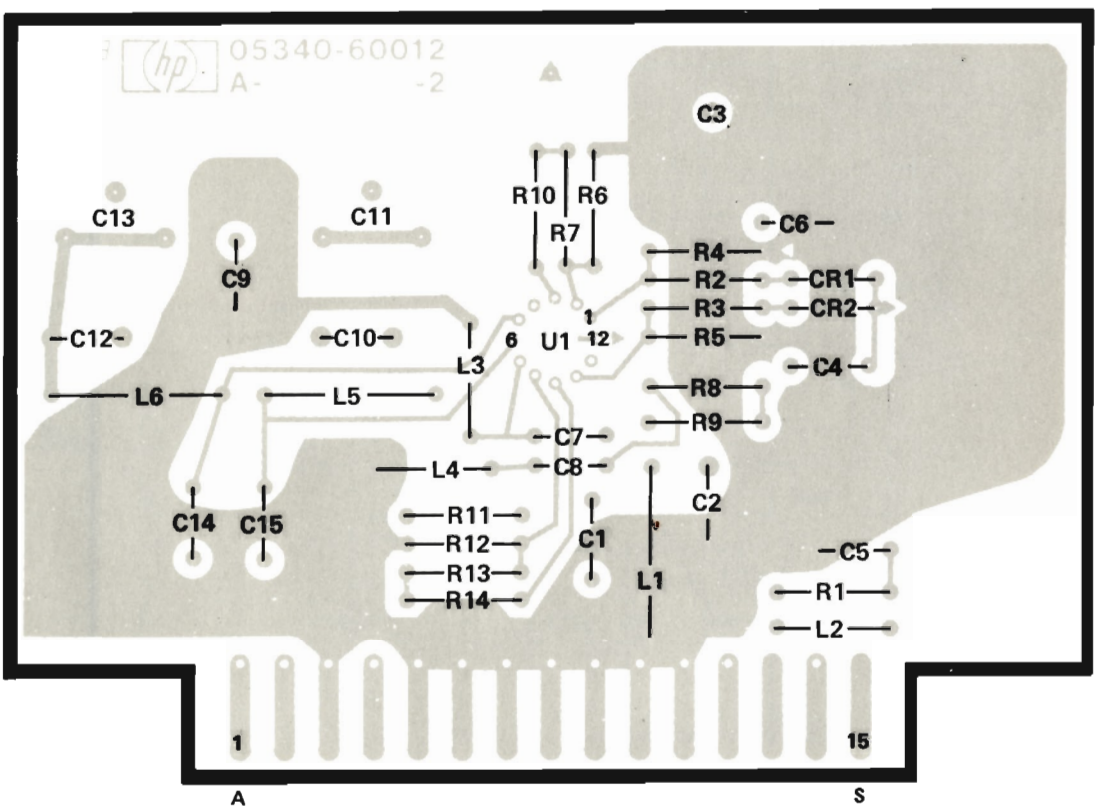
F A15U1(12) .05 V/cm, .1 μs/div

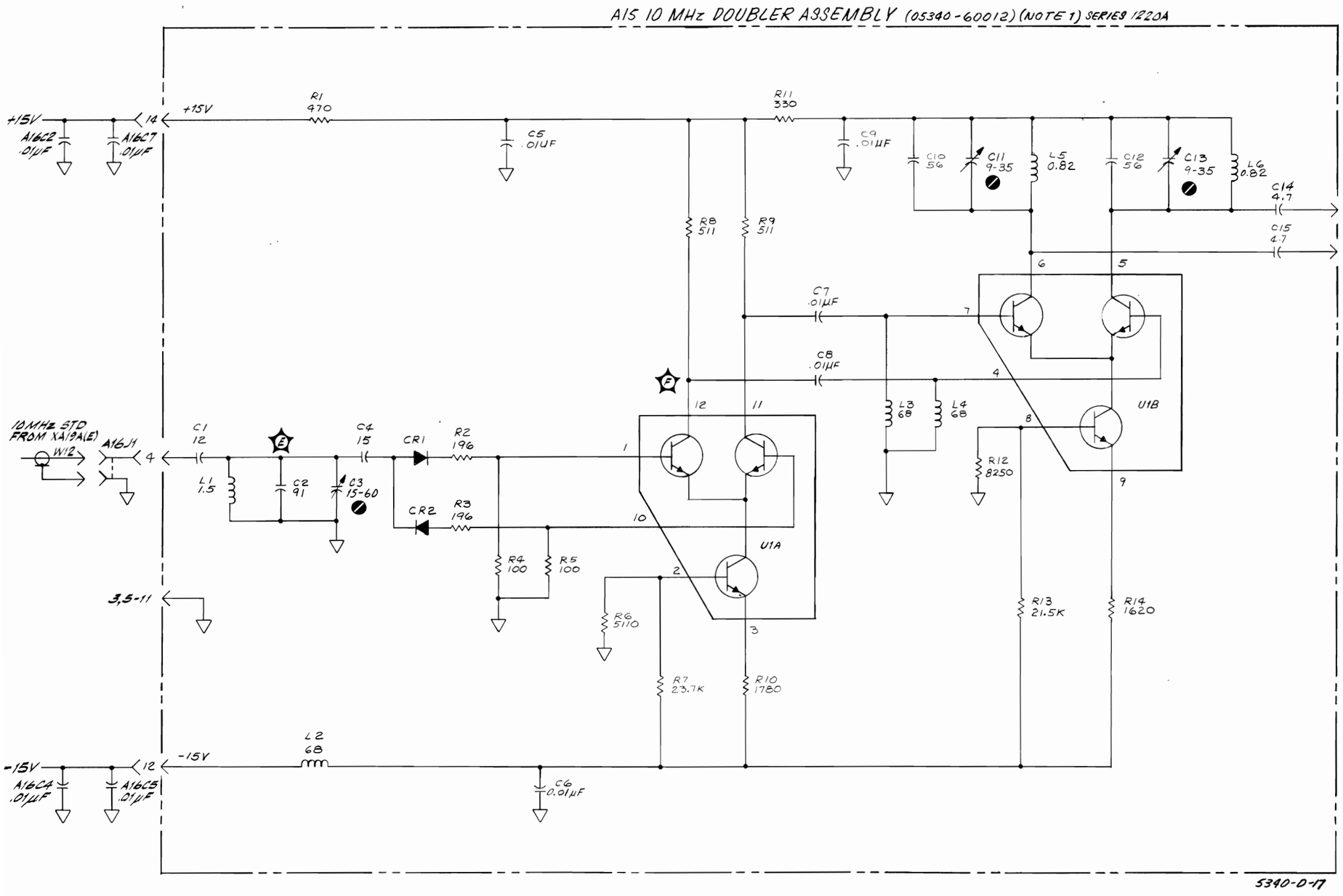


G XA15(2) .05 V/cm, .1 μs/div

H XA15(1) .05 V/cm, .1 μs/div

Waveforms taken with oscilloscope 10:1 probes. Oscilloscope sync set to INT, SLOPE, to +, and DISPLAY to ALT.


05340-60012
A- -2
C3
R10
R6
R7
C13
C11
C6
R4
C9
R2
CR1
R3
CR2
C12
C10
L3
6
U1
1
12
R5
C4
L6
L5
R8
R9
C7
L4
C8
C2
C14
C15
R11
R12
R13
R14
C1
L1
C5
R1
L2
1
15
A
S



NOTES

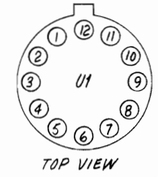
1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

A15
C1-15 CR1,2 L1-6 R1-14 U1

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1,2	1901-0535
U1	1858-0004 CA3049



TOP VIEW

Figure 8-21. A15 10 MHz Doubler Assembly

Figure 8-21
A15 10 MHz DOUBLER ASSEMBLY

(See Page 8-39)

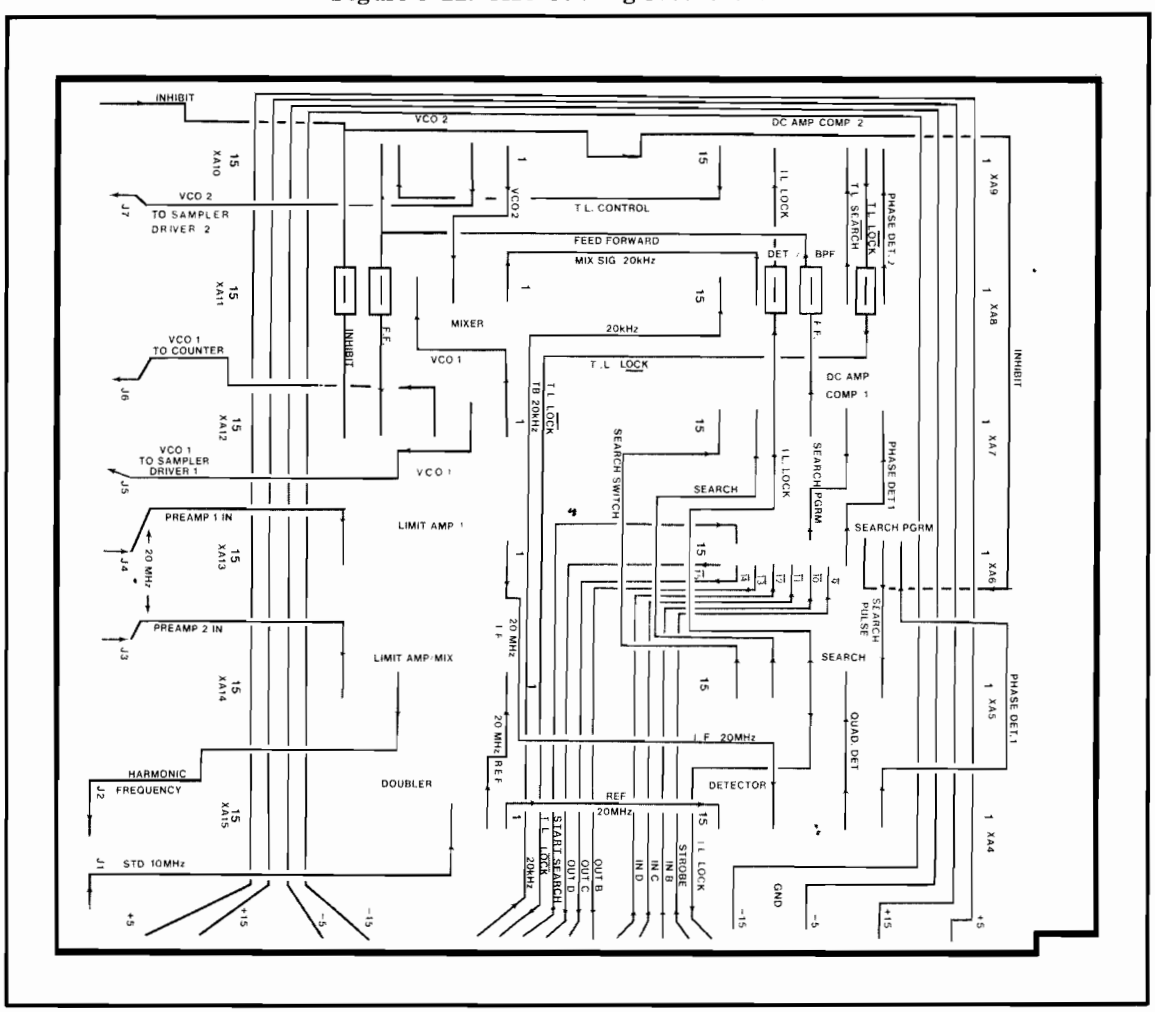
A16 CASTING MOTHERBOARD ASSEMBLY 05340-60015

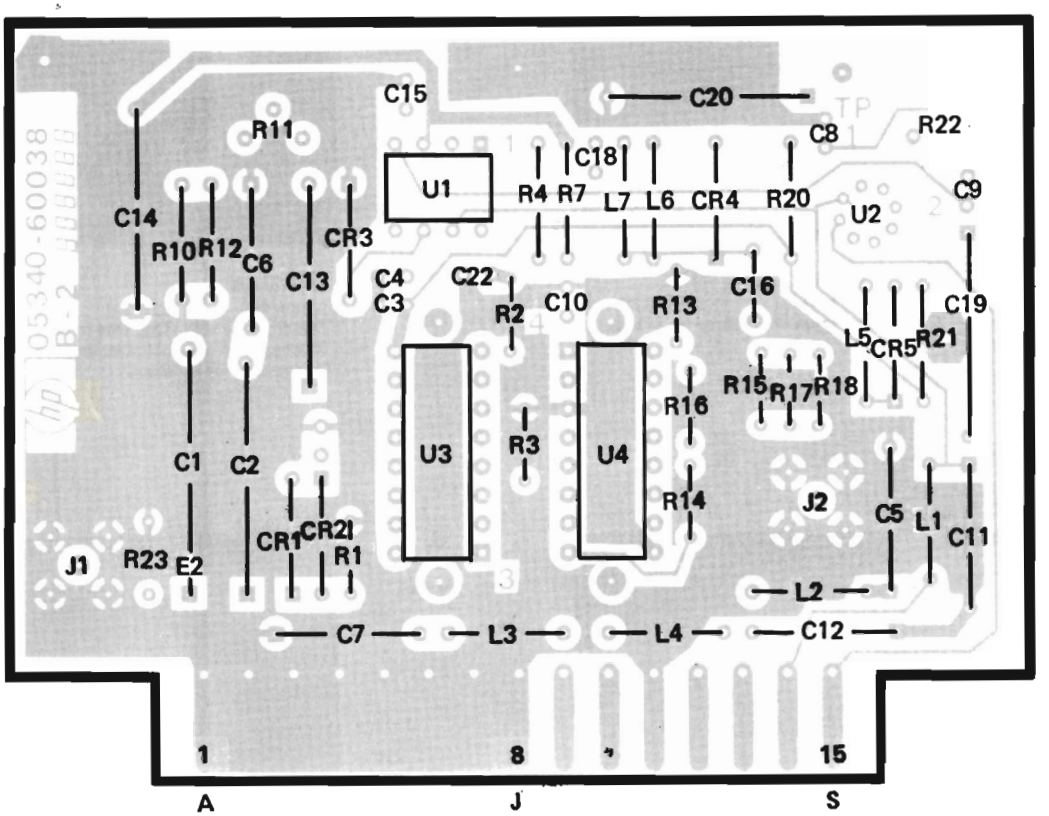
A16 is a six layer interconnect board used to interconnect assemblies A4 through A15 and also to provide connections to other points in the counter. The ⊣□⊢ symbol denotes a feedthrough point. For example, the inhibit signal connects to XA10(10), XA11(10), and XA12(10). The signal is used by A10 and A12. The connection at XA11(10) is for convenience only and is not used by A11.

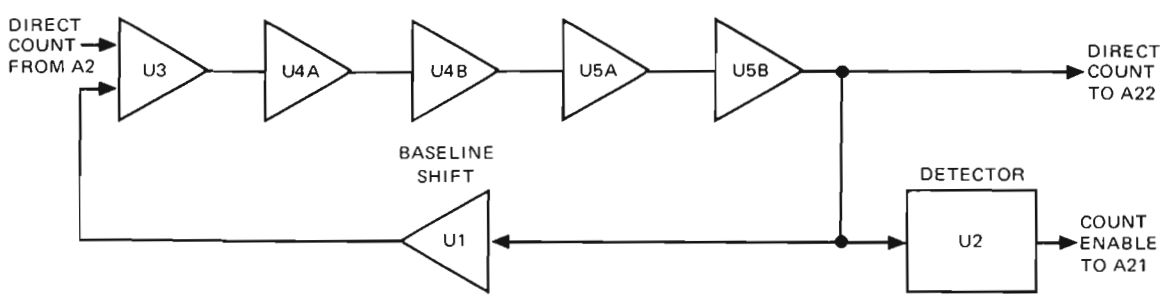
Since multilayer construction is used for A16, extreme care should be used when unsoldering wires, connectors, and jacks. Use the minimum amount of heat necessary to unsolder parts. When replacing the printed-circuit connectors, clip off the connector from the top of the board, then unsolder each pin.

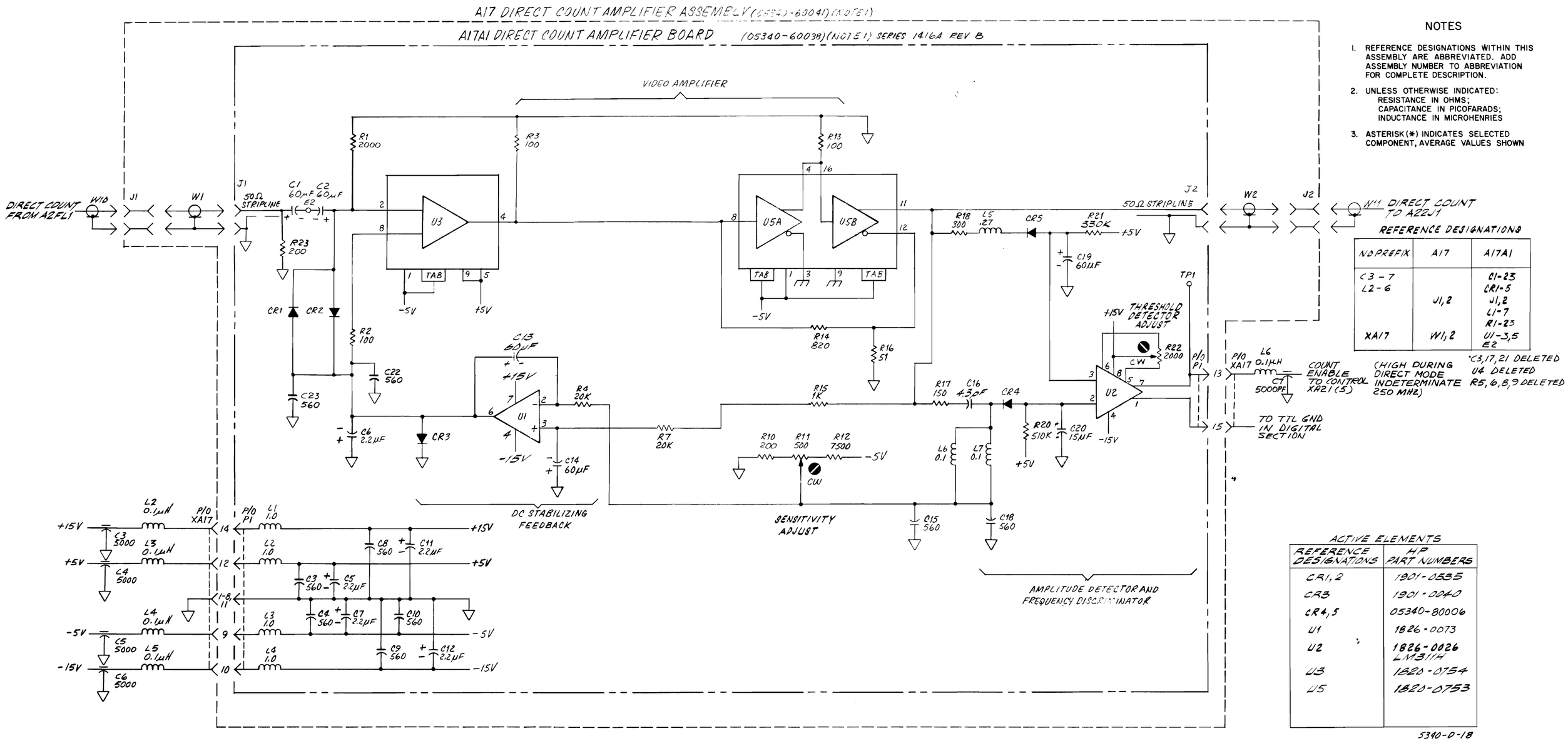
Care should be taken when connecting cables to J1 through J7. Use a straight on motion for mating the connectors.

Figure 8-22. A16 Casting Motherboard




C15
C20
R11
C8
R22
U1
C18
R4 R7 L7 L6 CR4 R20
C9
U2
C14
R10 R12 C6
C13
CR3
C4
C3
C22
R2
C10
R13
C16
C19
L5 CR5 R21
R15 R17 R18
R16
U3
R3
U4
C1
C2
R14
J2
C5
L1
C11
J1
R23
E2
CR1
CR2
R1
L2
C7
L3
L4
C12
1
8
15
A
J
S


DIRECT COUNT FROM A2
U3
U4A
U4B
U5A
U5B
DIRECT COUNT TO A22
BASELINE SHIFT
U1
DETECTOR
U2
COUNT ENABLE TO A21



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN

REFERENCE DESIGNATIONS

NO PREFIX	A17	A17A1
C3-7 L2-6		C1-23 CR1-5
	U1,2	U1,2 L1-7 R1-23
XA17	W1,2	U1-3,5 E2

*C3,17,21 DELETED
U4 DELETED
R5,6,8,9 DELETED

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1,2	1901-0535
CR3	1901-0040
CR4,5	05340-80006
U1	1826-0073
U2	1826-0026 LM311H
U3	1820-0754
U5	1820-0753

5340-D-18

Figure 8-23. A17 Direct Count Amplifier Assembly

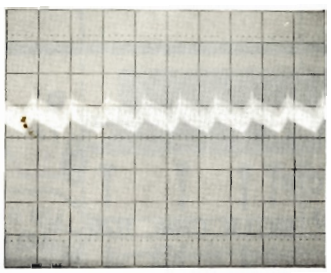
Figure 8-23
A17 DIRECT COUNT AMPLIFIER ASSEMBLY

(See Page 8-43)

Part of Figure 8-24. A18 Standard 10 MHz Oscillator Assembly
A18 10 MHz Oscillator Assembly (Option 001)

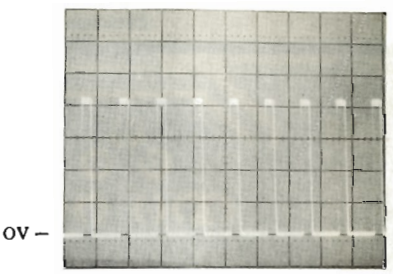
WAVEFORMS FOR TEST POINT (Z)

a.



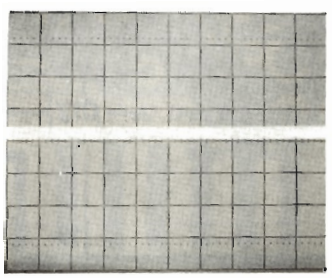
.01 V/div, dc
.1 ms/div
Oscillator warmed-up for 24 hours

b.



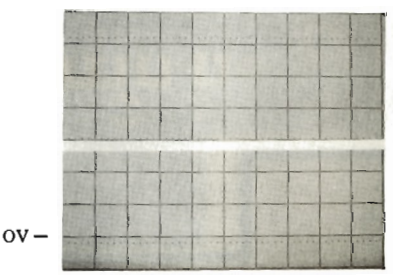
.5 V/div, dc
.1 ms/div
XA18 pin 11 with green wire to A33 disconnected (no load). Oscillator warmed up for 24 hours

c.



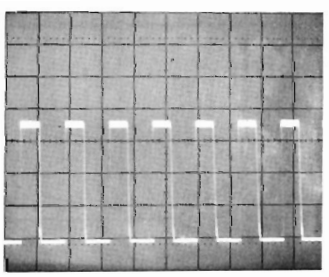
.02 V/div, dc
.1 ms/div
Oscillator off for at least 24 hours (cold)

d.

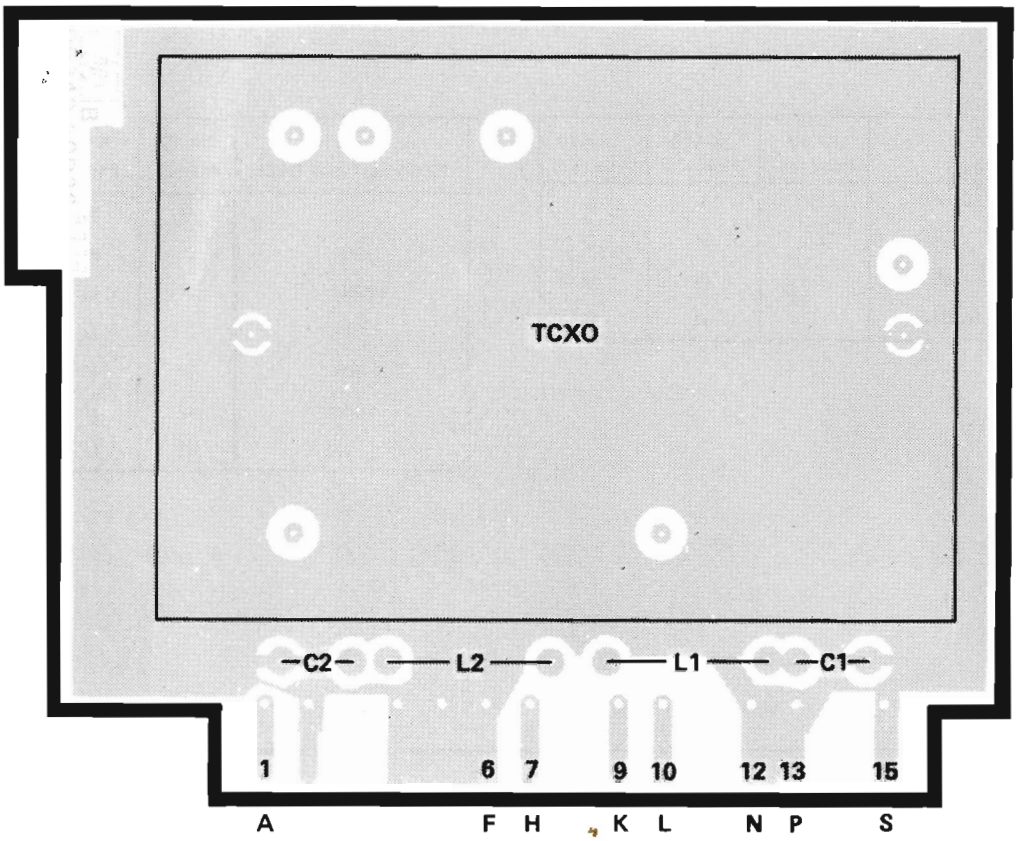


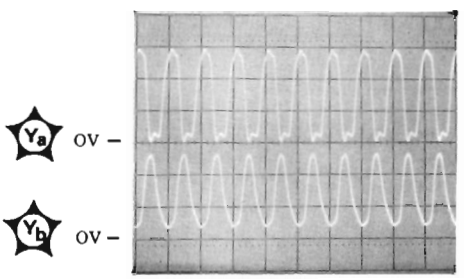
.5 V/div, dc
.1 ms/div
XA18 pin 11 with green wire disconnected (no load). Oscillator off for at least 24 hours (cold)

e.



Same as d except oscillator is on for 30 minutes from cold start

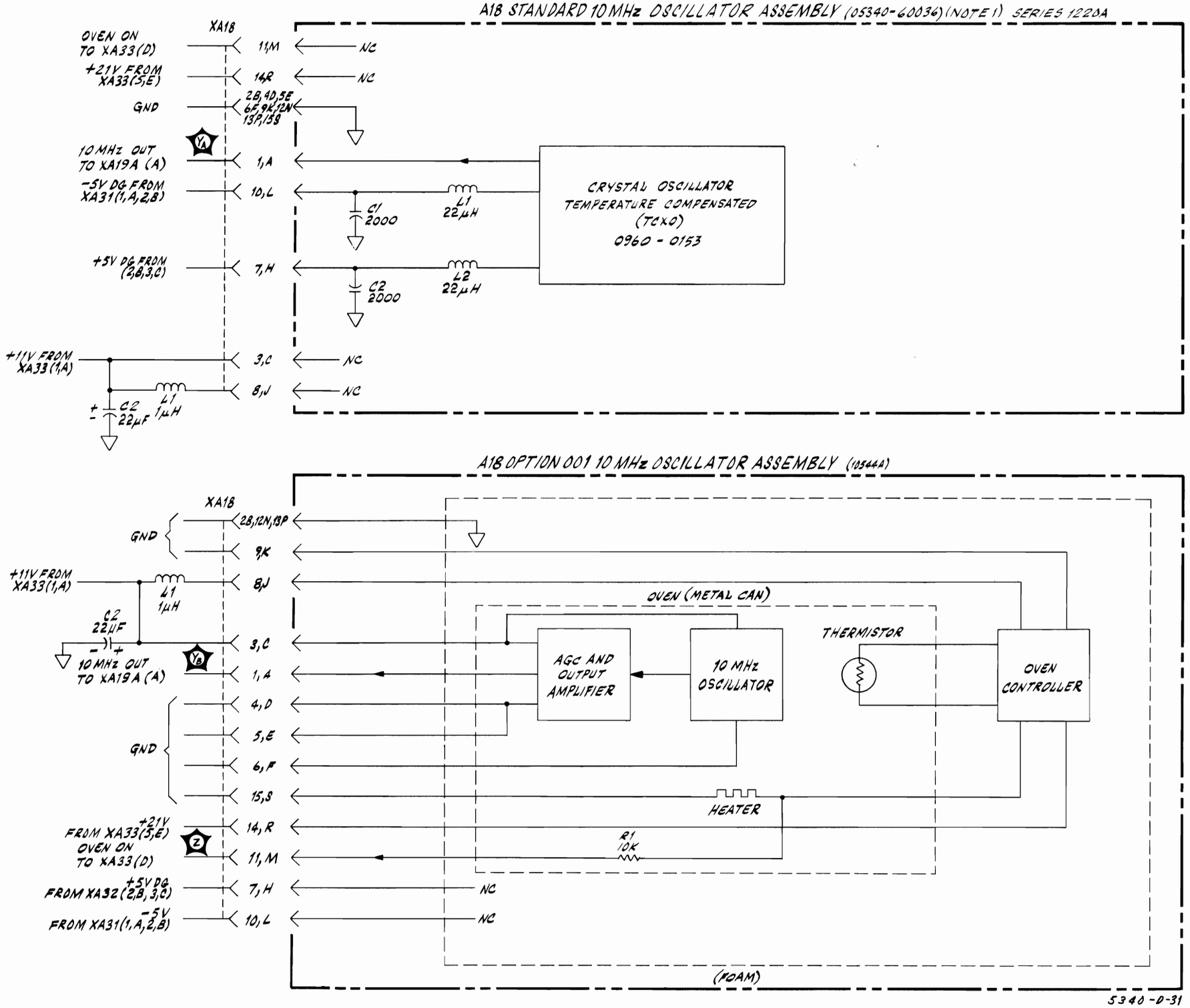




Top: .1 V/div, dc
Bottom: .1 V/div, dc
.1 μs/div

Ya is for 5340A with standard oscillator

Yb is for 5340A with Option 001 Oscillator



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

NO PREFIX	A1B
C2	C1, 2
	L1, 2

A COMPLETE PARTS LIST FOR THIS ASSEMBLY STARTS ON PAGE 6-18 AND 6-32.

Figure 8-24. A18 Standard 10 MHz Oscillator Assembly
A18 10 MHz Oscillator Assembly (Option 001)

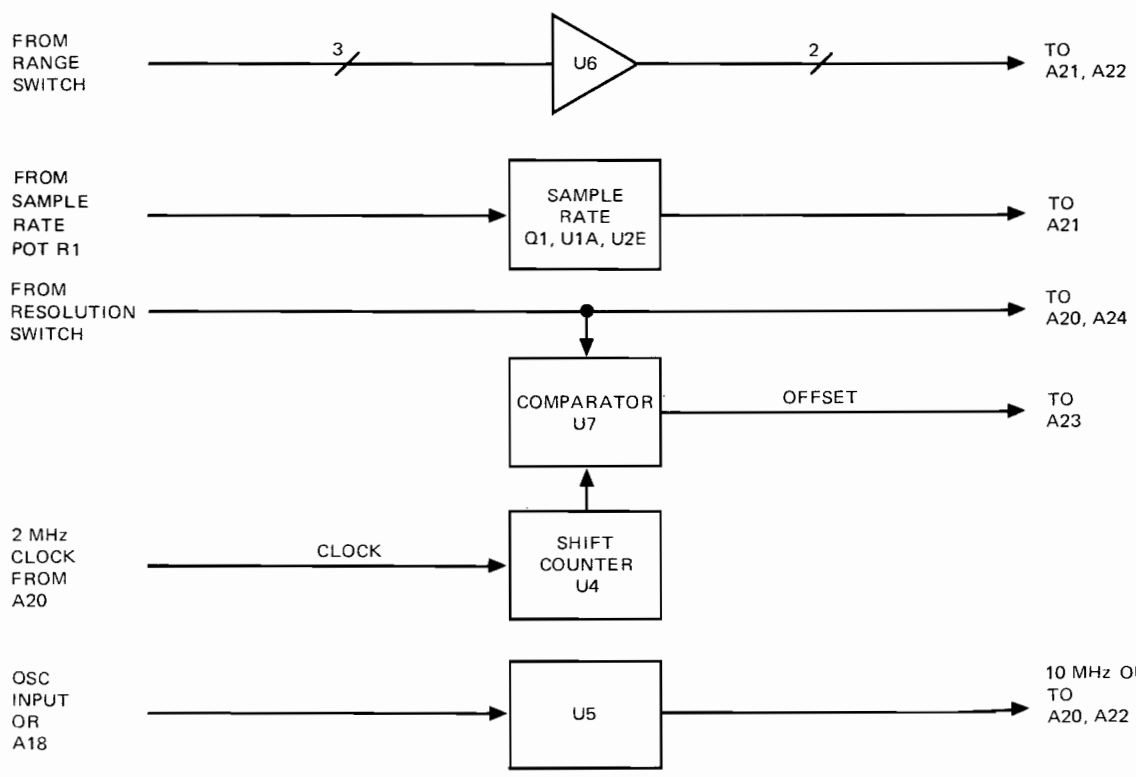
Figure 8-24
A18 STANDARD 10 MHz OSCILLATOR ASSEMBLY
A18 10 MHz OSCILLATOR ASSEMBLY (Option 001)

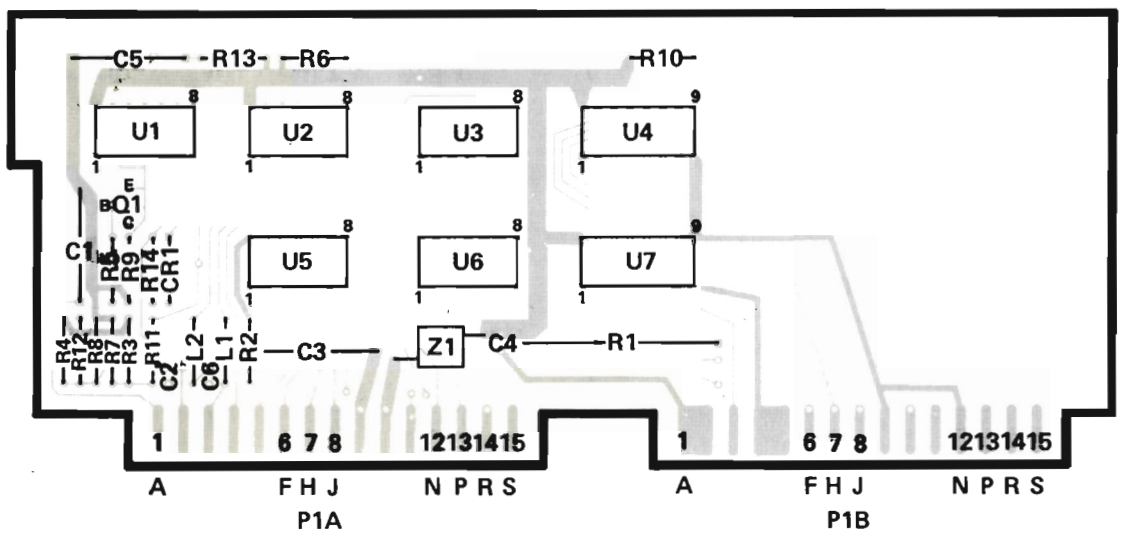
(See Page 8-45)

Part of Figure 8-25. A19 Interface A Assembly

RANGE	XA19 P1B(10)	XA19 P1A(13)	XA19 P1A(14)
10 Hz - 250 MHz	H	L	L
CHK	L	H	L
250 MHz - 18 GHz	L	H	H
10 Hz - 18 GHz	H	H	H

RESOLUTION (HZ)	XA19 P1B(6)	XA19 P1B(7)	XA19 P1B(8)
1	H	H	H
10	L	H	H
100	H	L	H
1K	L	L	H
10K	H	H	L
100K	L	H	L
1M	H	L	L





ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1	1901-0040
Q1	1854-0560
U1	1820-0537
U2	1820-0174 SN7404N
U3	1820-0068 SN7410N
U4	1820-0716 SN7416IN
U5,6	1820-0054 SN7400N
U7	1820-0706 9324

5340-D-35

NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES.

REFERENCE DESIGNATIONS

NO PREFIX	A19
R1-2 S2-5	C1-6 CR1 L1-3 Q1 R1-14 U1-7

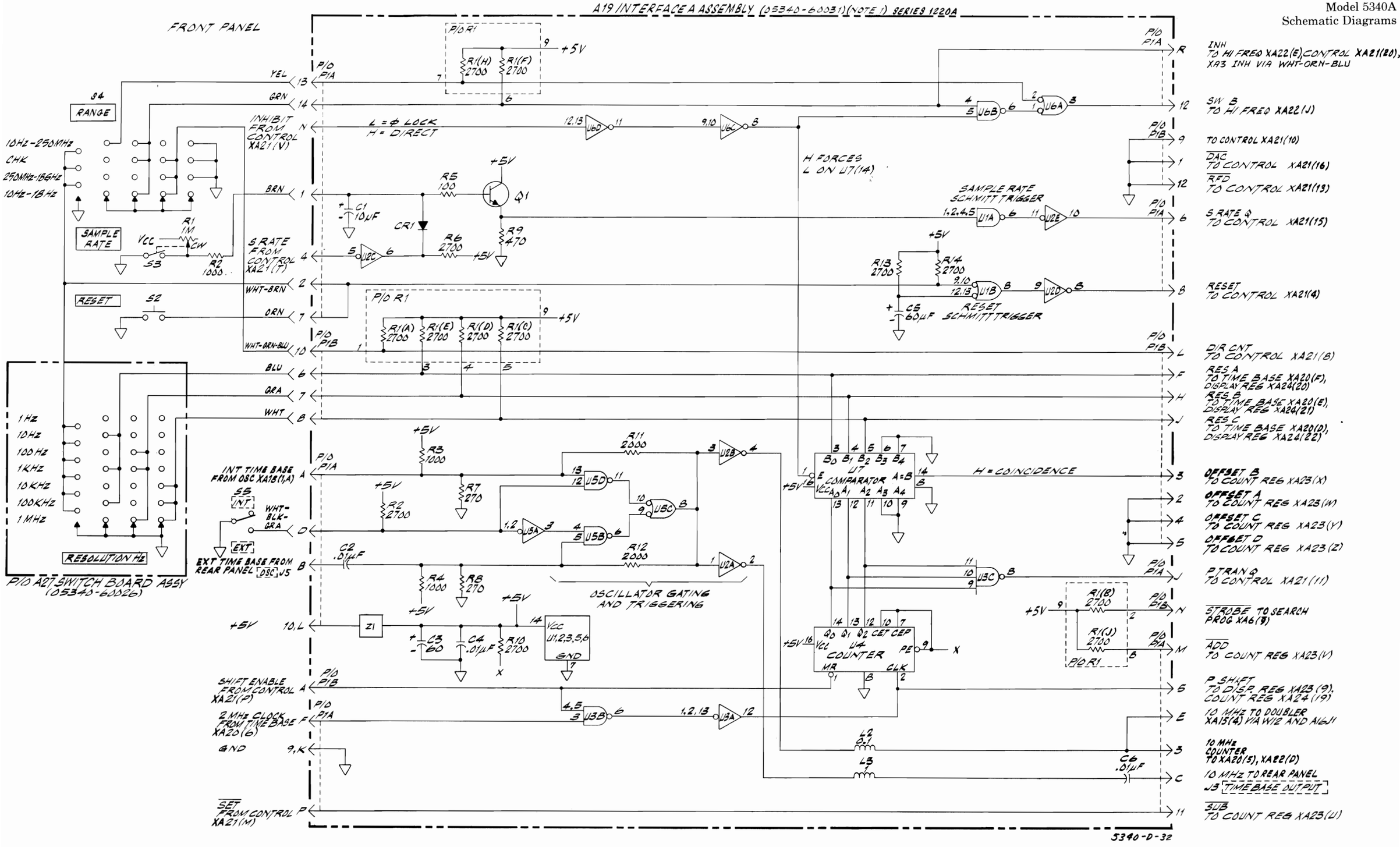


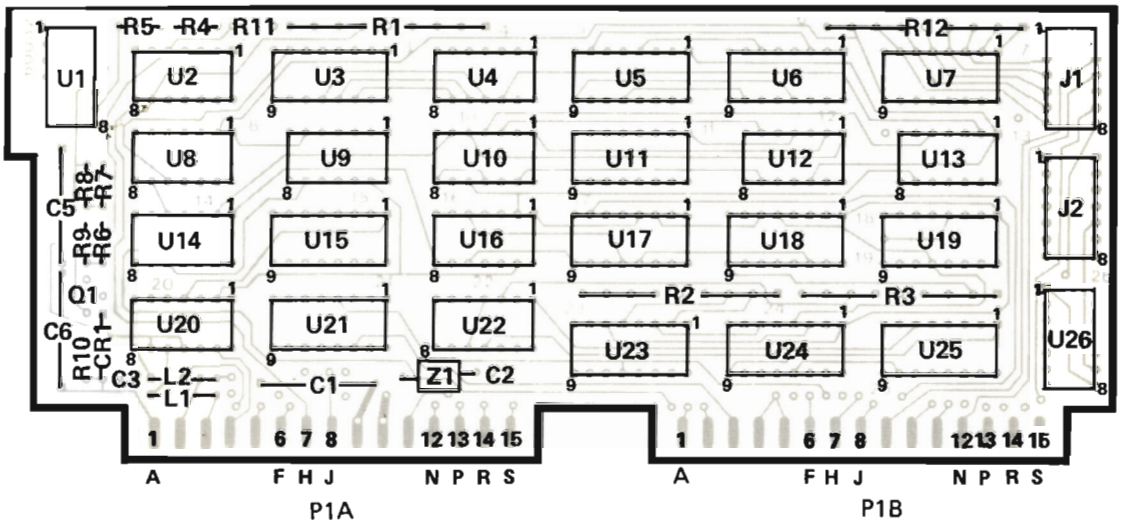
Figure 8-25. A19 Interface A Assembly (Standard Instrument), A27 Resolution Switch Assembly

Figure 8-25
A19 INTERFACE A ASSEMBLY (STANDARD INSTRUMENT), A27 RESOLUTION SWITCH ASSEMBLY

(See Page 8-47)

U25 (1816-0184) ASCII Code Conversion Output Truth Table

OCTAL ADDRESS		BINARY ADDRESS $A_4 \longleftrightarrow A_0$	OUTPUTS							
			B_7	B_6	B_5	B_4	B_3	B_2	B_1	B_0
0	0	00000	0	1	1	1	1	0	1	1
0	1	00001	0	1	1	1	1	0	1	1
0	2	00010	0	1	1	1	1	0	1	1
0	3	00011	0	1	1	1	1	0	1	1
0	4	00100	0	1	1	1	0	1	1	1
0	5	00101	0	1	0	1	1	1	1	1
0	6	00110	0	1	1	0	1	1	1	1
0	7	00111	0	0	1	1	1	1	1	1
1	0	01000	0	1	1	1	1	1	0	1
1	1	01001	0	1	1	1	1	1	0	1
1	2	01010	0	1	1	1	1	1	0	1
1	3	01011	0	1	1	1	1	1	1	1
1	4	01100	0	1	1	1	1	1	1	1
1	5	01101	0	1	1	1	1	1	1	1
1	6	01110	0	1	1	1	1	1	1	1
1	7	01111	0	1	1	1	1	1	1	1
2	0	10000	0	1	1	1	1	1	1	1
2	1	10001	0	1	1	1	1	1	1	1
2	2	10010	0	1	1	1	1	1	1	1
2	3	10011	0	1	1	1	1	1	1	1
2	4	10100	0	1	1	1	1	1	1	1
2	5	10101	0	1	1	1	1	1	1	1
2	6	10110	0	1	1	1	1	1	1	1
2	7	10111	0	1	1	1	1	1	1	1
3	0	11000	0	1	1	1	1	1	1	0
3	1	11001	0	1	1	1	1	1	1	0
3	2	11010	0	1	1	1	1	1	1	0
3	3	11011	0	1	1	1	1	1	1	0
3	4	11100	0	1	1	1	1	1	1	1
3	5	11101	0	1	1	1	1	1	1	1
3	6	11110	0	1	1	1	1	1	1	1
3	7	11111	0	1	1	1	1	1	1	1



ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	WP PART NUMBERS
CR1	1901-0040
Q1	1854-0560
U1, 14, 16	1820-0054 SN7400N
U2	1820-1051 74132
U3	1820-0716 SN7416IN
U4	1820-0587 DM74L10N
U5, 6	1820-0710 93L22
U7	1816-0185
U8	1820-0077 SN7474N
U9	1820-0782 SN7427N
U10, 20	1820-0174 SN7404N
U11, 18, 19, 24	1820-0839 SN74175N
U12	1820-0765 SN74197N
U13	1820-0583 DM74L00N
U15, 21	1820-0706 9324
U17, 23	1820-0616 9322
U22	1820-0596 DM74L74N
U25	1816-0184
U26	1820-0328 DM7402N

5340-D-36

NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES.

REFERENCE DESIGNATIONS

A19
C1-6 CR1 L1 Q1 R1-12 U1-26 Z1

U17 (1816-0185) ASCII Code Conversion Output Truth Table

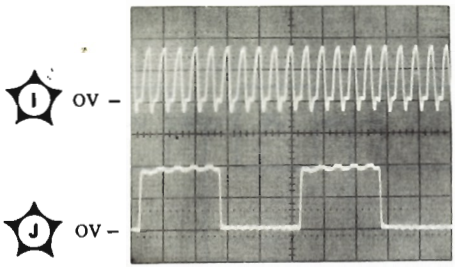
OCTAL ADDRESS		BINARY ADDRESS $A_4 \longleftarrow A_0$	OUTPUTS							
			B_7	B_6	B_5	B_4	B_3	B_2	B_1	B_0
0	0	00000	1	1	0	0	0	1	0	1
0	1	00001	1	0	1	0	1	0	1	1
0	2	00010	0	0	0	0	0	0	0	0
0	3	00011	1	0	0	0	1	1	0	1
0	4	00100	0	0	0	0	1	0	1	0
0	5	00101	1	1	0	0	1	1	0	0
0	6	00110	1	1	0	0	1	1	1	1
0	7	00111	1	0	1	0	0	0	0	0
1	0	01000	1	1	0	0	0	1	0	1
1	1	01001	1	0	1	0	1	0	1	1
1	2	01010	1	0	0	0	0	0	0	0
1	3	01011	1	0	0	0	1	1	0	1
1	4	01100	0	0	0	0	1	0	1	0
1	5	01101	1	1	0	0	0	1	0	0
1	6	01110	1	0	1	0	0	0	0	0
1	7	01111	1	0	1	0	0	0	0	0
2	0	10000	0	0	0	0	0	0	0	0
2	1	10001	0	0	0	0	0	0	0	0
2	2	10010	0	0	0	0	0	0	0	0
2	3	10011	0	0	0	0	0	0	0	0
2	4	10100	0	0	0	0	0	0	0	0
2	5	10101	0	0	0	0	0	0	0	0
2	6	10110	1	0	1	1	1	0	0	1
2	7	10111	1	0	1	1	1	0	0	0
3	0	11000	1	0	1	1	0	1	1	1
3	1	11001	1	0	1	1	0	1	1	0
3	2	11010	1	0	1	1	0	1	0	1
3	3	11011	1	0	1	1	0	1	0	0
3	4	11100	1	0	1	1	0	0	1	1
3	5	11101	1	0	1	1	0	0	1	0
3	6	11110	1	0	1	1	0	0	0	1
3	7	11111	1	0	1	1	0	0	0	0

Figure 8-26. A19 Interface B Assembly (Part of Option 011)

Figure 8-26
A19 INTERFACE B ASSEMBLY (PART OF OPTION 011)

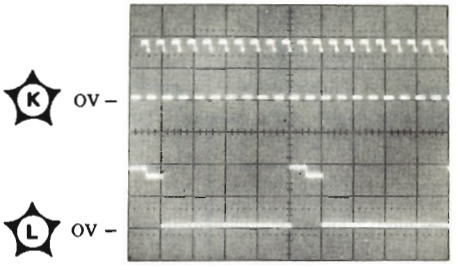
(See Page 8-49)

Part of Figure 8-27. A20 Time Base Assembly



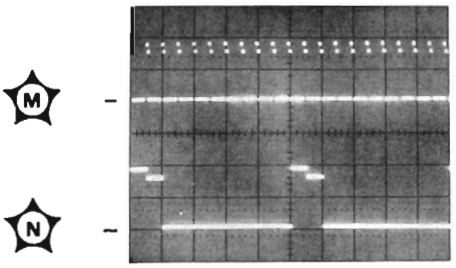
I A20U23(6) .2 V/cm dc, .2 μs/div

J A20U2(2) .2 V/cm dc, .2 μs/div



K A20U2(4) .2 V/cm, .2 μs/div

L A20U2(5) .2 V/cm, .2 μs/div



M A20U2(6) .2 V/cm, 20 ms/div

N A20U2(7) .2 V/cm, 20 ms/div

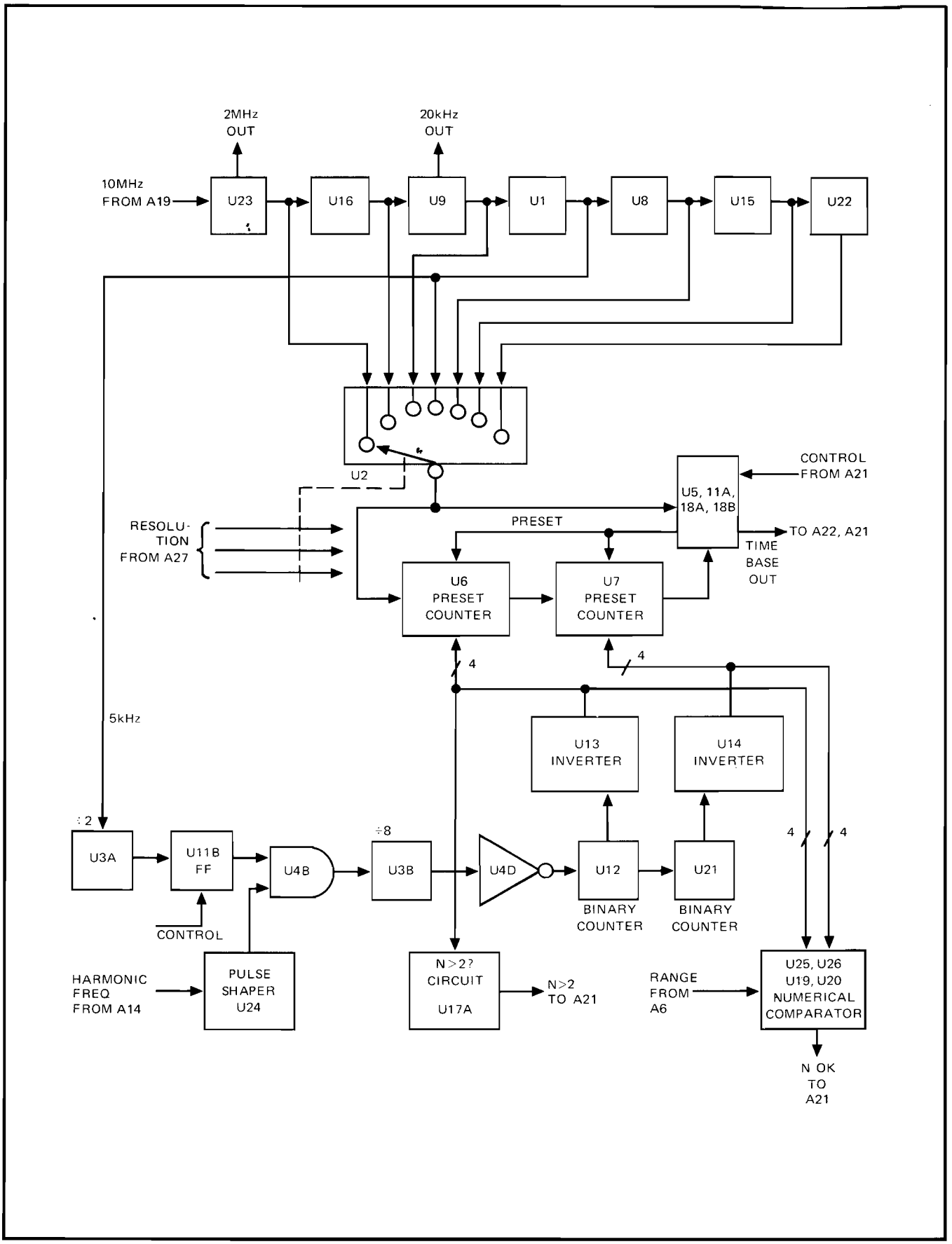
Waveforms taken with 10:1 oscilloscope probe. Counter controls set to CHECK, 1 Hz RESOLUTION, SAMPLE RATE - fully ccw.

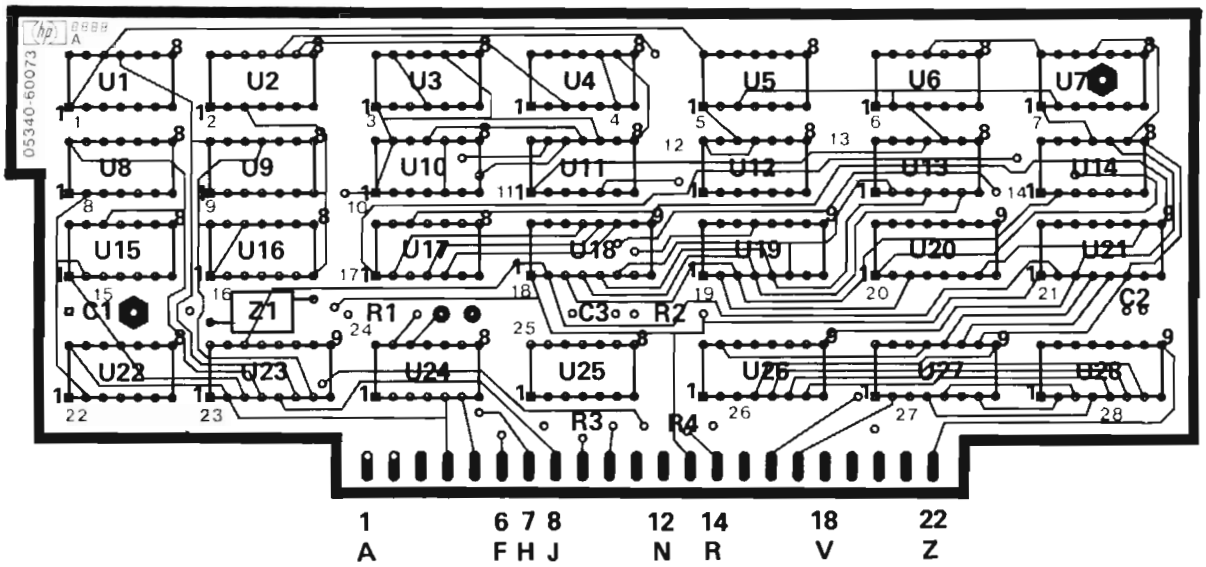
A20 Truth Table

RESOLUTION SWITCH SETTING	U23(13) BINARY WEIGHT = 4	U23(12) BINARY WEIGHT = 2	U23(11) BINARY WEIGHT = 1	EQUIVALENT INPUT	SELECTED SIGNAL
1	H	H	H	4 + 2 + 1 = 7	I_7 1 Hz pin 9
10	H	H	L	4 + 2 = 6	I_6 10 Hz pin 7
100	H	L	H	4 + 1 = 5	I_5 100 Hz pin 6
1K	H	L	L	4	I_4 1 kHz pin 5
10K	L	H	H	2 + 1 = 3	I_3 10 kHz pin 4
100K	L	H	L	2	I_2 100 kHz pin 3
1M	L	L	H	1	I_1 1 MHz pin 2

VIII

Part of Figure 8-27. A20 Time Base Assembly





ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
U1, 8, 9, 12, 15, 16, 22	1820-0055 SN7490N
U2, 4	1820-0054 SN7400N
U3, 10, 11	1820-0077 SN7474
U5, 6, 7	1820-0099 SN7493N
U13, 14	1820-0174 SN7404N
U17	1820-0069 SN7420N
U18, 21	1820-0716 SN74161N
U19, 20, 26, 27	1820-0904 93L24
U23	1820-0615 9312
U24	1820-1147 SN5419
U25	1820-0261 SN74121N
U28	1820-0214 SN7442N

NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS
 INDUCTANCE IN MICROHENRIES
3. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN

REFERENCE DESIGNATIONS
A20
C1-3 R1-3 U1-27 Z1

05340-D-19B

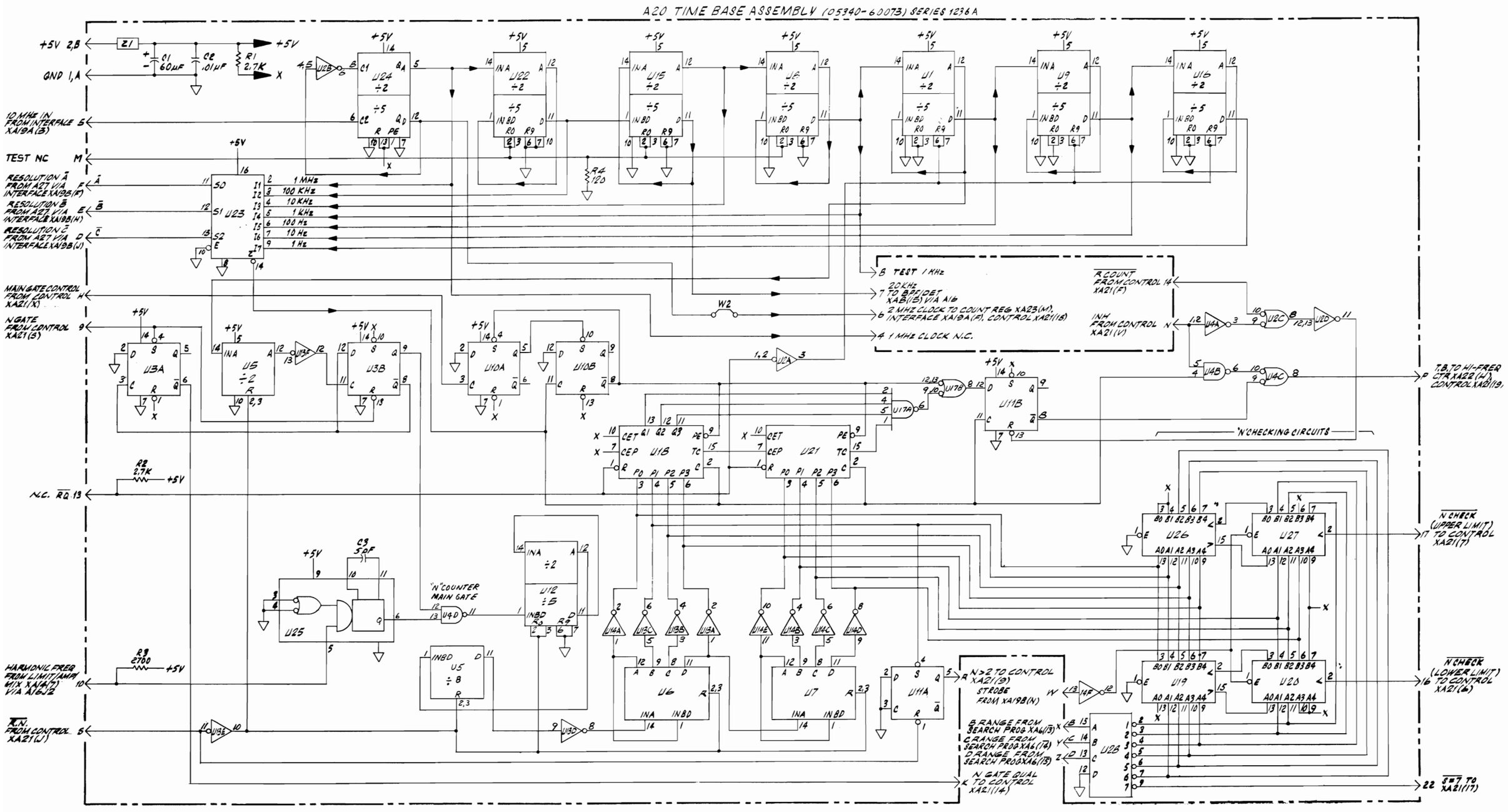
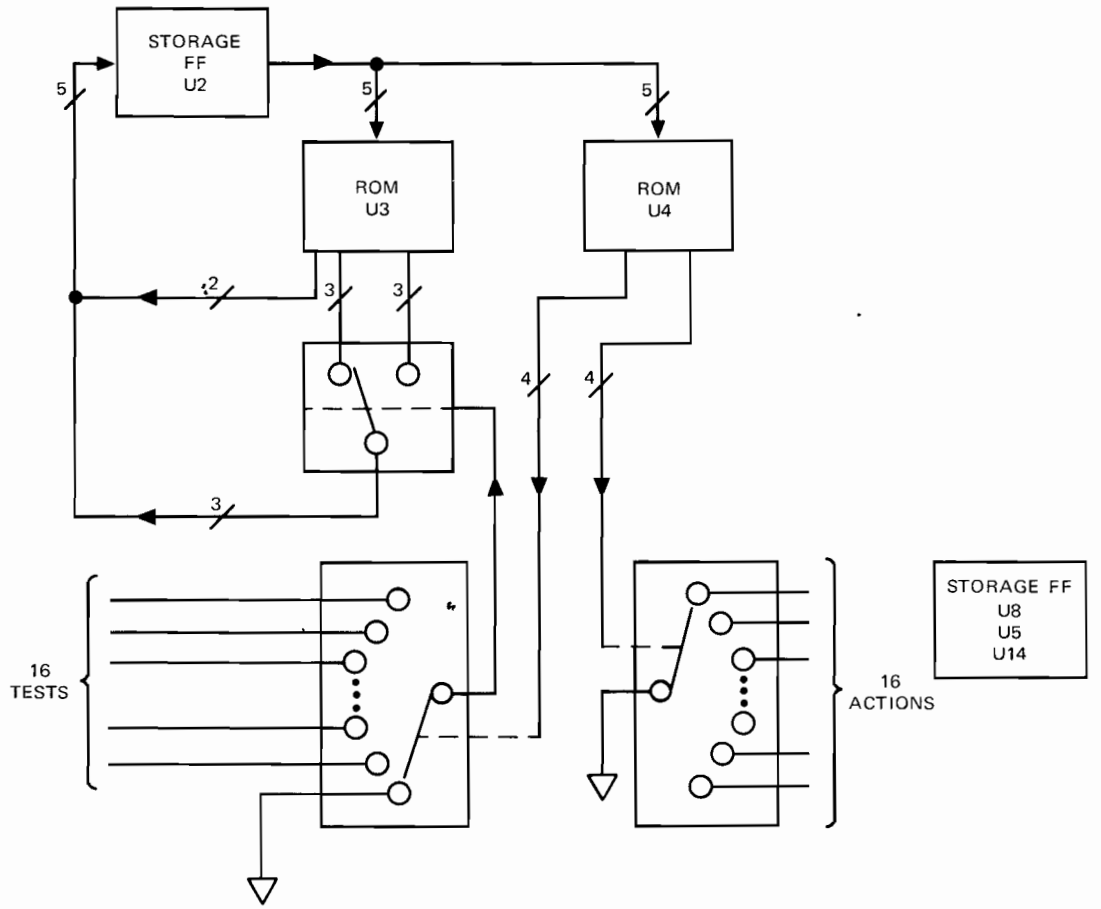


Figure 8-27. A20 Time Base Assembly

Figure 8-27
A20 TIME BASE ASSEMBLY

(See Page 8-53)

Part of Figure 8-28. A21 Control Assembly

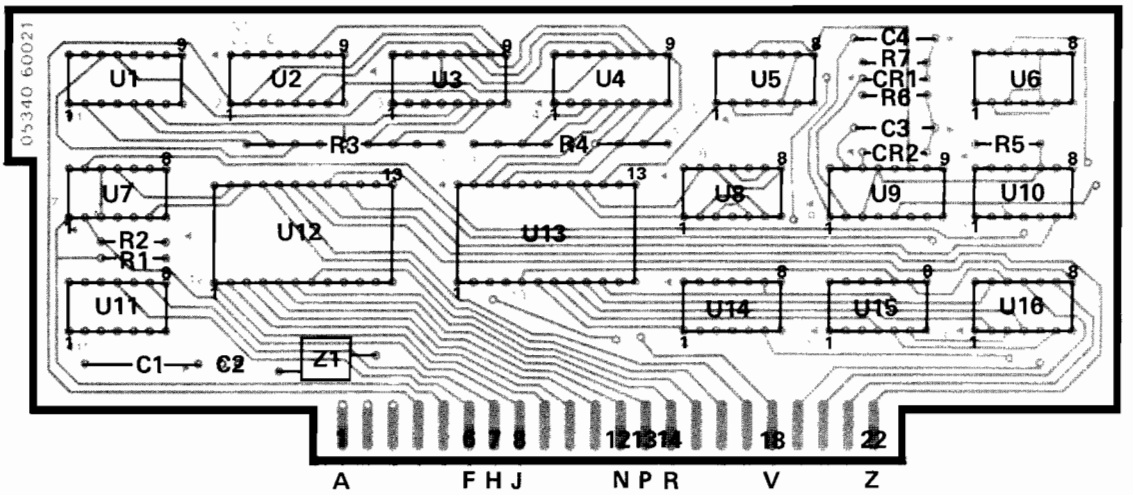


PRESENT-FUTURE ROM
U3 (1816-0003) Truth Table

ADDRESS	INPUTS					OUTPUTS								
	E	D	C	B	A	Y8	Y7	Y6	Y5	Y4	Y3	Y2	Y1	
PIN NO.	14	13	12	11	10	9	7	6	5	4	3	2	1	
0	0	0	0	0	0	0	1	0	0	0	0	0	0	
1	0	0	0	0	1	0	1	1	0	1	1	1	1	
2	0	0	0	1	0	0	0	0	1	0	0	1	1	
3	0	0	0	1	1	0	1	0	1	1	1	1	1	
4	0	0	1	0	0	0	1	1	1	1	1	0	1	
5	0	0	1	0	1	0	0	1	0	1	1	0	0	
6	0	0	1	1	0	0	0	0	0	0	0	1	0	
7	0	0	1	1	1	1	0	1	0	1	0	0	0	
8	0	1	0	0	0	0	1	0	0	1	0	0	0	
9	0	1	0	0	1	0	0	1	0	1	0	0	0	
10	0	1	0	1	0	1	0	0	0	0	0	0	0	
11	0	1	0	1	1	0	0	1	1	1	0	1	1	
12	0	1	1	0	0	0	0	1	1	0	0	0	0	
13	0	1	1	0	1	0	1	1	1	0	0	0	0	
14	0	1	1	1	0	0	1	1	1	0	0	1	0	
15	0	1	1	1	1	0	1	1	0	0	0	0	0	
16	1	0	0	0	0	1	0	0	0	1	0	0	0	
17	1	0	0	0	1	1	0	1	0	0	0	0	0	
18	1	0	0	1	0	0	0	0	0	0	0	0	0	
19	1	0	0	1	1	0	0	0	0	0	0	0	0	
20	1	0	1	0	0	1	1	1	1	1	0	0	0	
21	1	0	1	0	1	1	0	1	0	1	1	1	1	
22	1	0	1	1	0	0	0	0	0	0	0	0	0	
23	1	0	1	1	1	0	0	0	0	0	0	0	1	
24	1	1	0	0	0	1	1	0	0	0	0	1	0	
25	1	1	0	0	1	1	1	1	0	1	0	0	1	
26	1	1	0	1	0	0	1	0	1	1	0	0	1	
27	1	1	0	1	1	0	0	0	0	0	0	0	0	
28	1	1	1	0	0	1	1	1	1	0	1	0	0	
29	1	1	1	0	1	1	1	1	0	0	1	0	1	
30	1	1	1	1	0	1	1	0	0	0	0	0	1	
31	1	1	1	1	1	1	1	1	1	0	1	1	1	
	DESTINATION					U2"D"		U1 "1" INPUTS			U1 "0" INPUTS			

ACTION-TEST ROM
U4 (1816-0004) Truth Table

						ACTION				TEST			
ADDRESS	INPUTS					OUTPUTS							
	E	D	C	B	A	Y8	Y7	Y6	Y5	Y4	Y3	Y2	Y1
PIN NO.	14	13	12	11	10	9	7	6	5	4	3	2	1
0	0	0	0	0	0	0	1	1	1	0	0	0	0
1	0	0	0	0	1	0	0	0	0	1	0	0	1
2	0	0	0	1	0	1	0	1	1	1	1	1	0
3	0	0	0	1	1	1	0	0	1	1	1	0	0
4	0	0	1	0	0	1	0	0	1	1	0	0	0
5	0	0	1	0	1	1	0	1	1	1	1	1	0
6	0	0	1	1	0	0	0	1	1	1	0	1	1
7	0	0	1	1	1	0	0	1	0	0	0	0	0
8	0	1	0	0	0	1	0	0	1	0	0	0	0
9	0	1	0	0	1	1	0	0	0	0	0	0	0
10	0	1	0	1	0	1	0	0	1	0	0	0	0
11	0	1	0	1	1	0	0	0	0	1	1	0	1
12	0	1	1	0	0	0	1	1	1	0	0	0	0
13	0	1	1	0	1	0	0	0	1	0	0	0	0
14	0	1	1	1	0	0	1	1	0	0	1	1	1
15	0	1	1	1	1	0	1	1	0	0	0	0	0
16	1	0	0	0	0	1	1	1	1	0	1	0	0
17	1	0	0	0	1	1	0	0	1	0	0	0	0
18	1	0	0	1	0	0	0	0	0	0	0	0	0
19	1	0	0	1	1	0	0	0	0	0	0	0	0
20	1	0	1	0	0	1	0	1	0	0	0	0	0
21	1	0	1	0	1	1	1	1	0	0	0	1	1
22	1	0	1	1	0	0	0	0	0	0	0	0	0
23	1	0	1	1	1	0	0	0	1	0	0	1	1
24	1	1	0	0	0	1	1	0	1	0	0	0	1
25	1	1	0	0	1	0	1	0	1	0	1	0	1
26	1	1	0	1	0	1	1	0	1	1	0	0	0
27	1	1	0	1	1	0	0	0	0	0	0	0	0
28	1	1	1	0	0	1	1	0	0	1	0	1	0
29	1	1	1	0	1	1	0	0	1	0	0	1	1
30	1	1	1	1	0	1	0	0	1	0	1	1	0
31	1	1	1	1	1	0	0	0	0	0	1	0	1
	DESTINATION					U13 ADDRESS				U12 ADDRESS			



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS.

REFERENCE DESIGNATIONS

A21
C1-4 CR1, 2 R1-7 U1-16 Z1

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1, 2	1901 - 0040
U1	1820 - 0616 9322
U2	1820 - 0788 SN55431
U3	1816 - 0003
U4	1816 - 0004
U5, 6, 7, 8, 14, 15	1820 - 0054 SN7400N
U9	1820 - 0515 9602
U10	1820 - 0077 SN7474N
U11	1820 - 0174 SN7404N
U12	1820 - 0643 SN74150N
U13	1820 - 0495 SN74154N
U16	1820 - 0068 SN7410N

5340-D-36

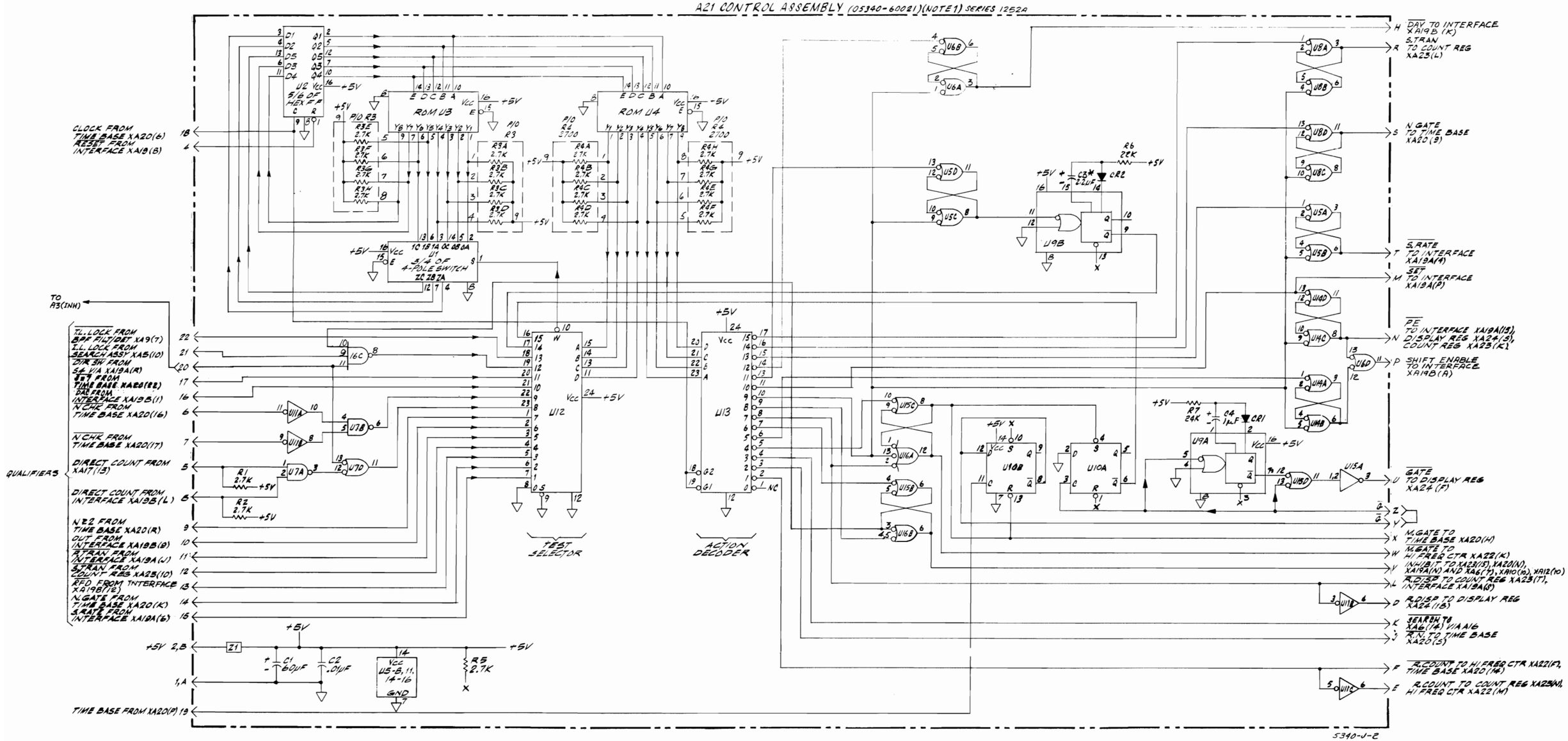
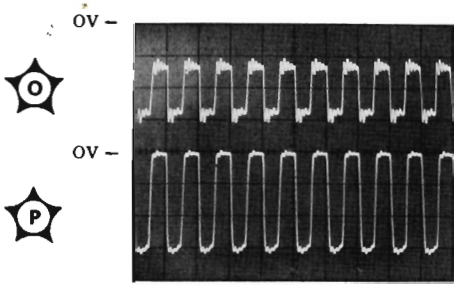


Figure 8-28. A21 Control Assembly

Figure 8-28
A21 CONTROL ASSEMBLY

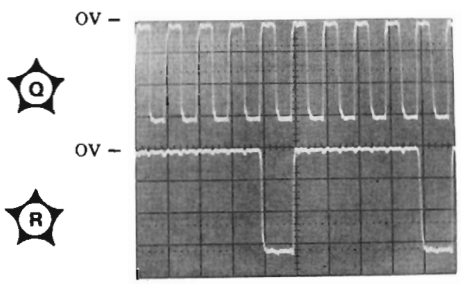
(See Page 8-55)

Part of Figure 8-29. A22 High Frequency Counter Assembly



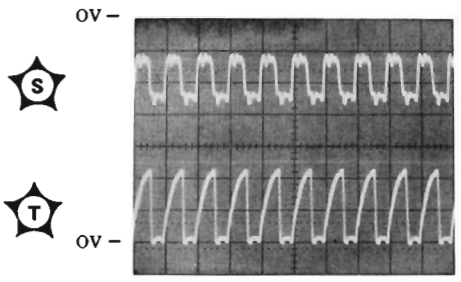
O A22U8(6) .005 V/cm dc, .1 μs/div

P A22U2(5) .02 V/cm dc, .1 μs/div



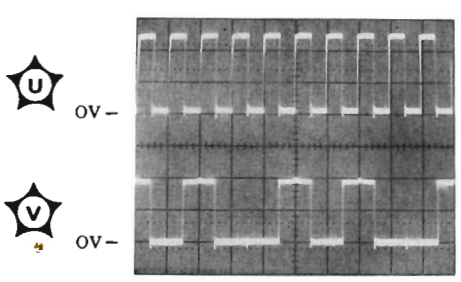
Q A22U2(6) .02 V/cm, .2 μs/div*

R A22U2(2) .02 V/cm dc, .2 μs/div*



S A22U1(13) .05 V/cm dc, .2 μs/div*

T A22U1(15) .2 V/cm dc, .2 μs/div*



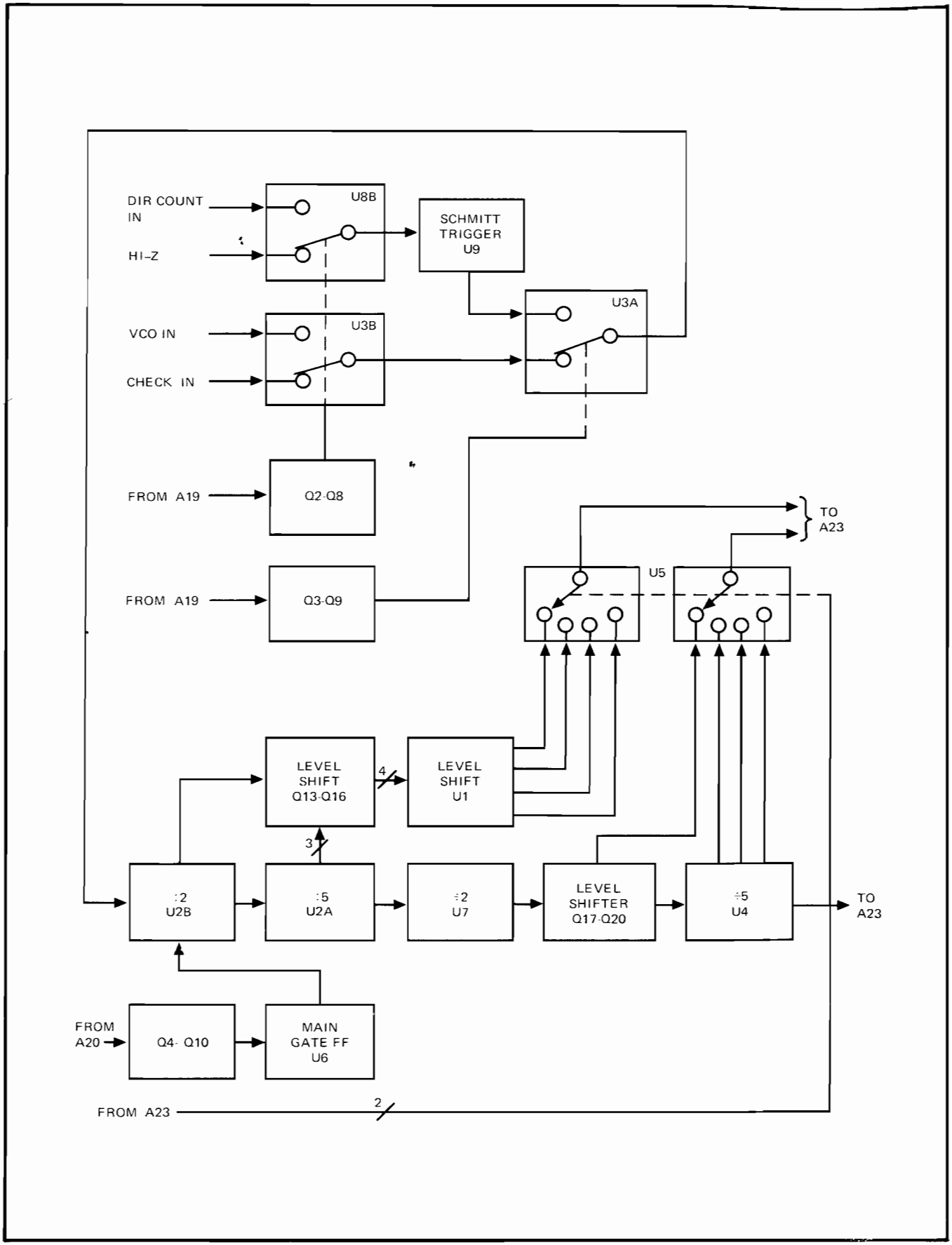
U A22U4(6) .2 V/cm dc, 2 μs/div*

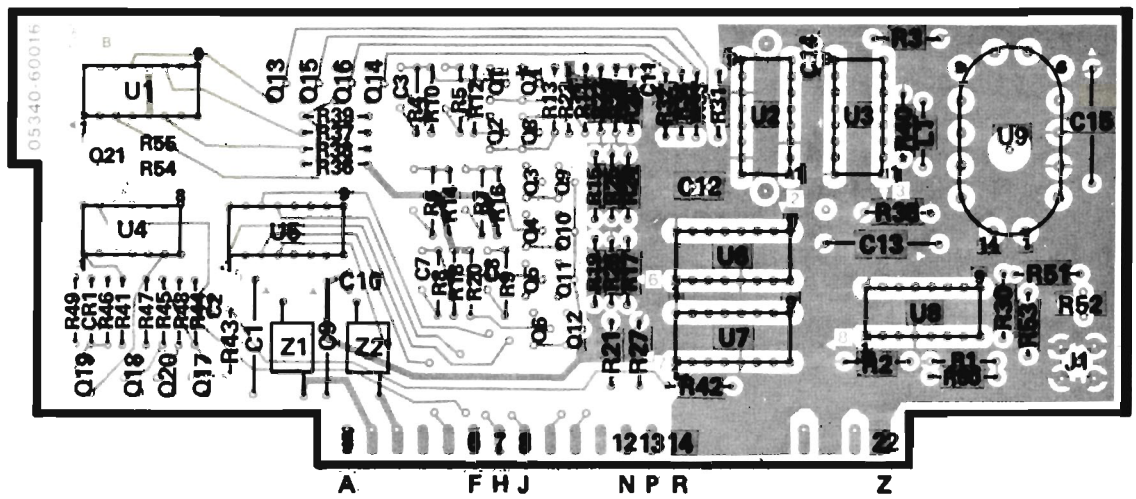
V A22U4(9) .2 V/cm dc, 2 μs/div*

Waveforms taken with 1 MHz oscillator connected to J4 (10 Hz to 250 MHz input). Use 10:1 oscilloscope probes. Oscilloscope sync set to INT, SLOPE to +, and DISPLAY to ALT. Set Counter RESOLUTION switch to 1 Hz, SAMPLE RATE fully ccw, RANGE to 10 Hz to 250 MHz.

*Display is present for 1 sec while main gate is open.

Part of Figure 8-29. A22 High Frequency Counter Assembly





REFERENCE DESIGNATIONS

A22
C1-C3, C7-15
CR1
U1
L1
Q1-20
R1-53
U1-9
Z1, 2

C4-C6 DELETED

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1	1901-0535
Q1-17, 21	1854-0071
Q18, 20	1854-0092 2N3563
Q19	1854-0009 2N709
U1	1820-0275 MC1039P
U2	1820-1019
U3,8	1820-0560
U4	1820-0751 SN74L96N
U5	1820-0610 9309
U6,7	1820-0557
U9	5086-7089

5340-D-21

NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES

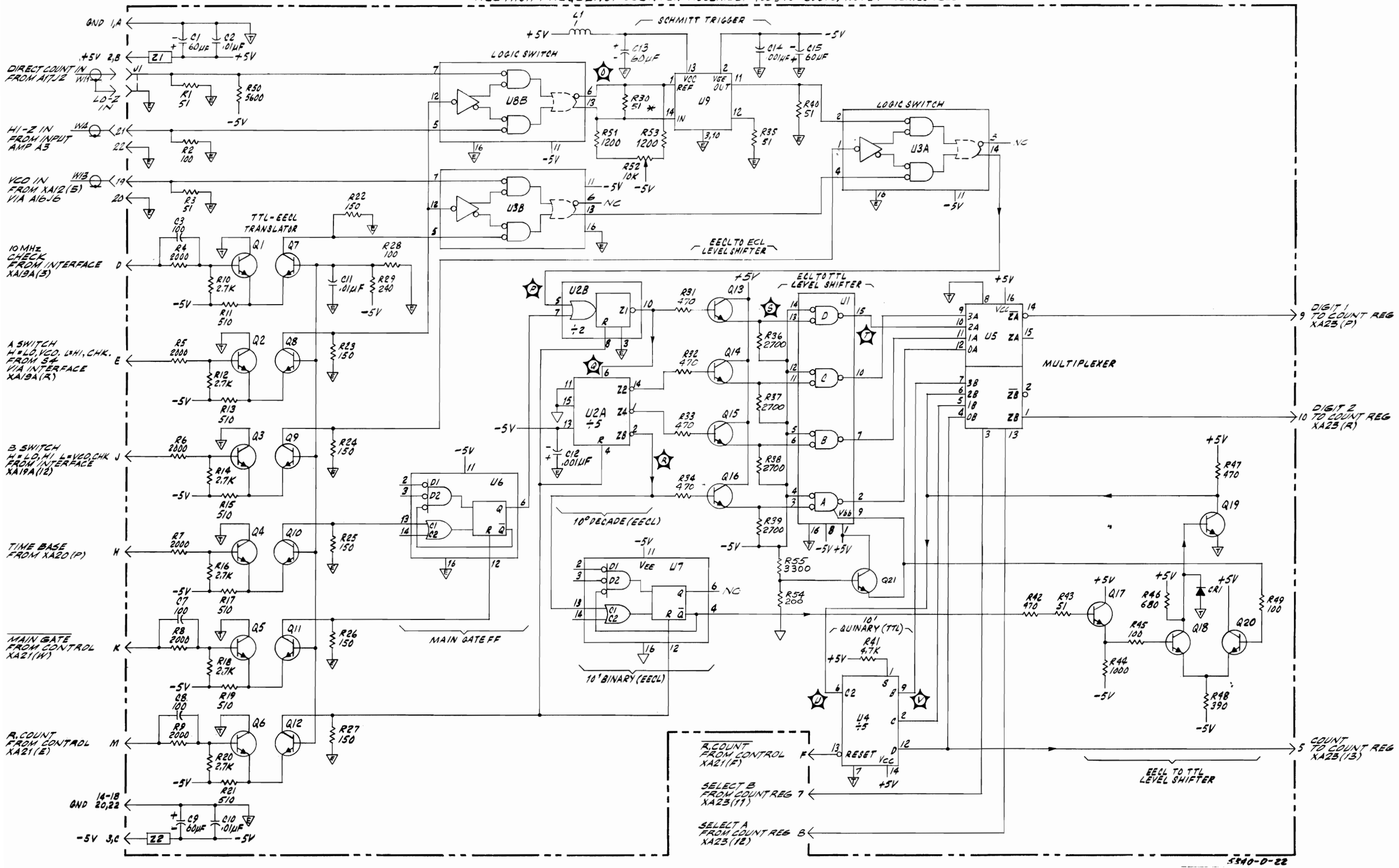
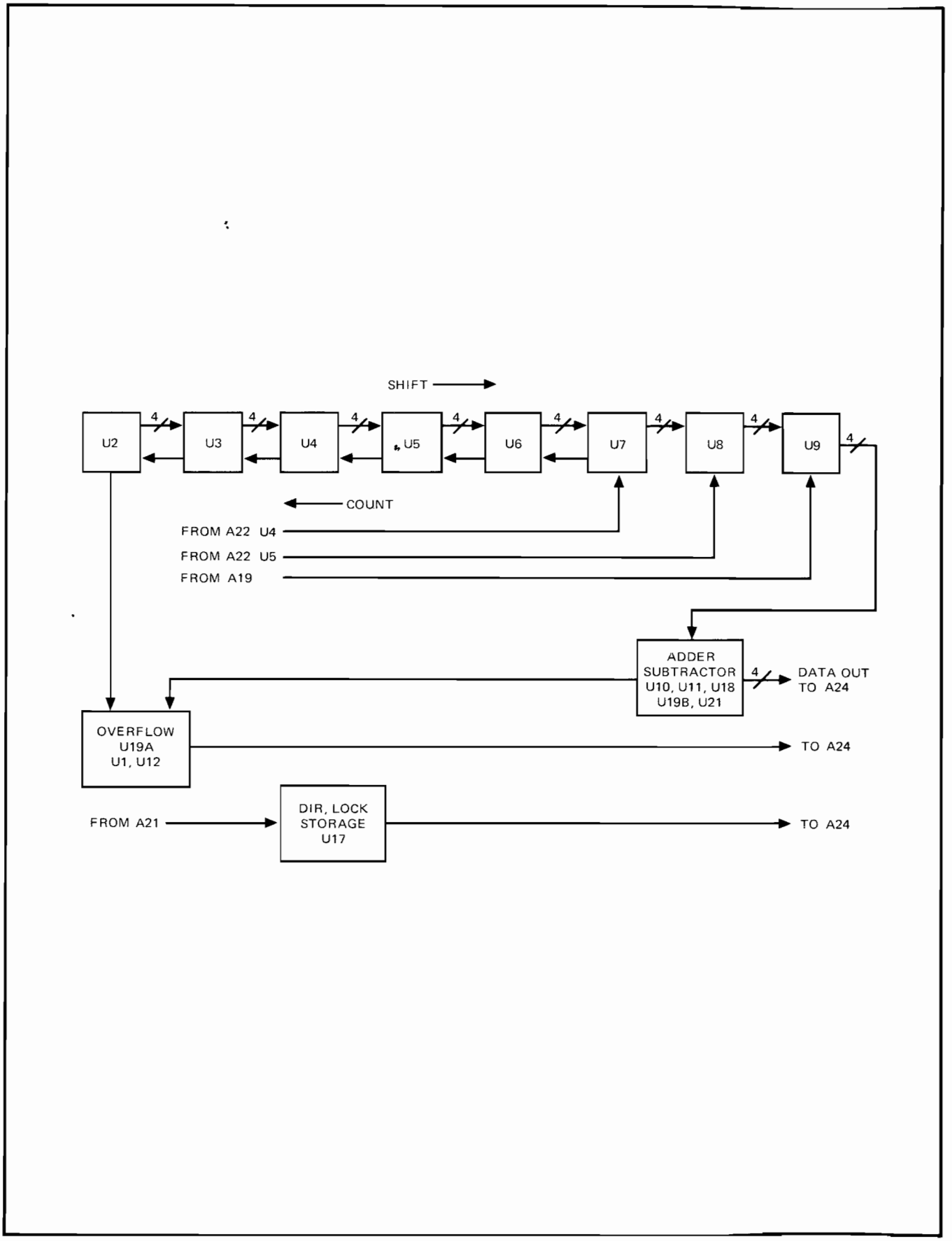


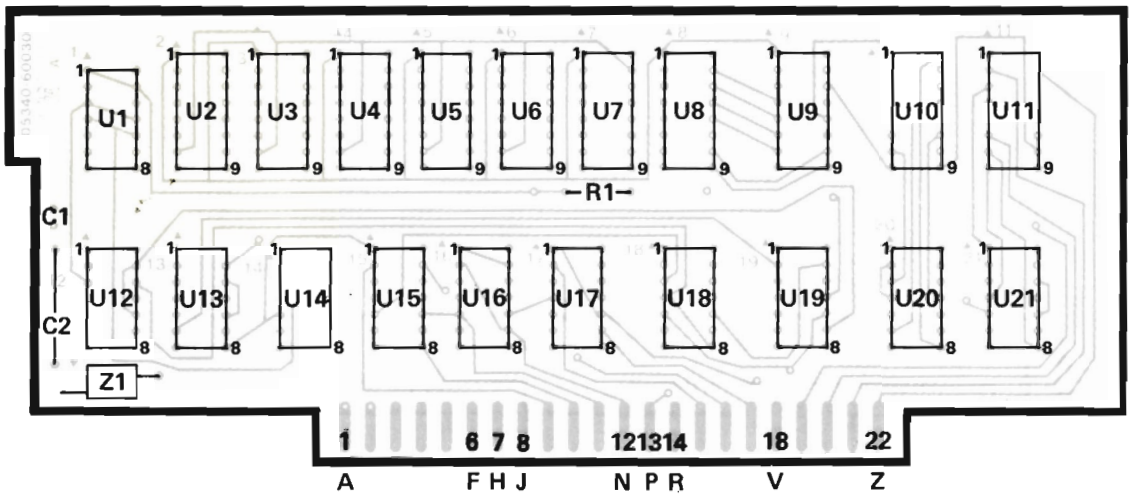
Figure 8-29. A22 High Frequency Counter Assembly

Figure 8-29
A22 HIGH FREQUENCY COUNTER ASSEMBLY

(See Page 8-59)

Part of Figure 8-30. A23 Count Register Assembly





NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS.

REFERENCE DESIGNATIONS

NO PREFIX	A23
R3	C1, 2 R1 U1-21 Z1

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
U1	1820-0596 DM74L74N
U2-7	1820-0986 86L75
U8, 9	1820-0659 SL17145
U10, 11	1820-0910 SN74LS83N
U12	1820-0583 DM74L00N
U13	1820-0588 DM74L20N
U14, 15, 18	1820-0054 SN7400N
U16, 17, 19	1820-0077 SN7474N
U20	1820-0282 SN7486N
U21	1820-0068 SN7410N

5340-D-35

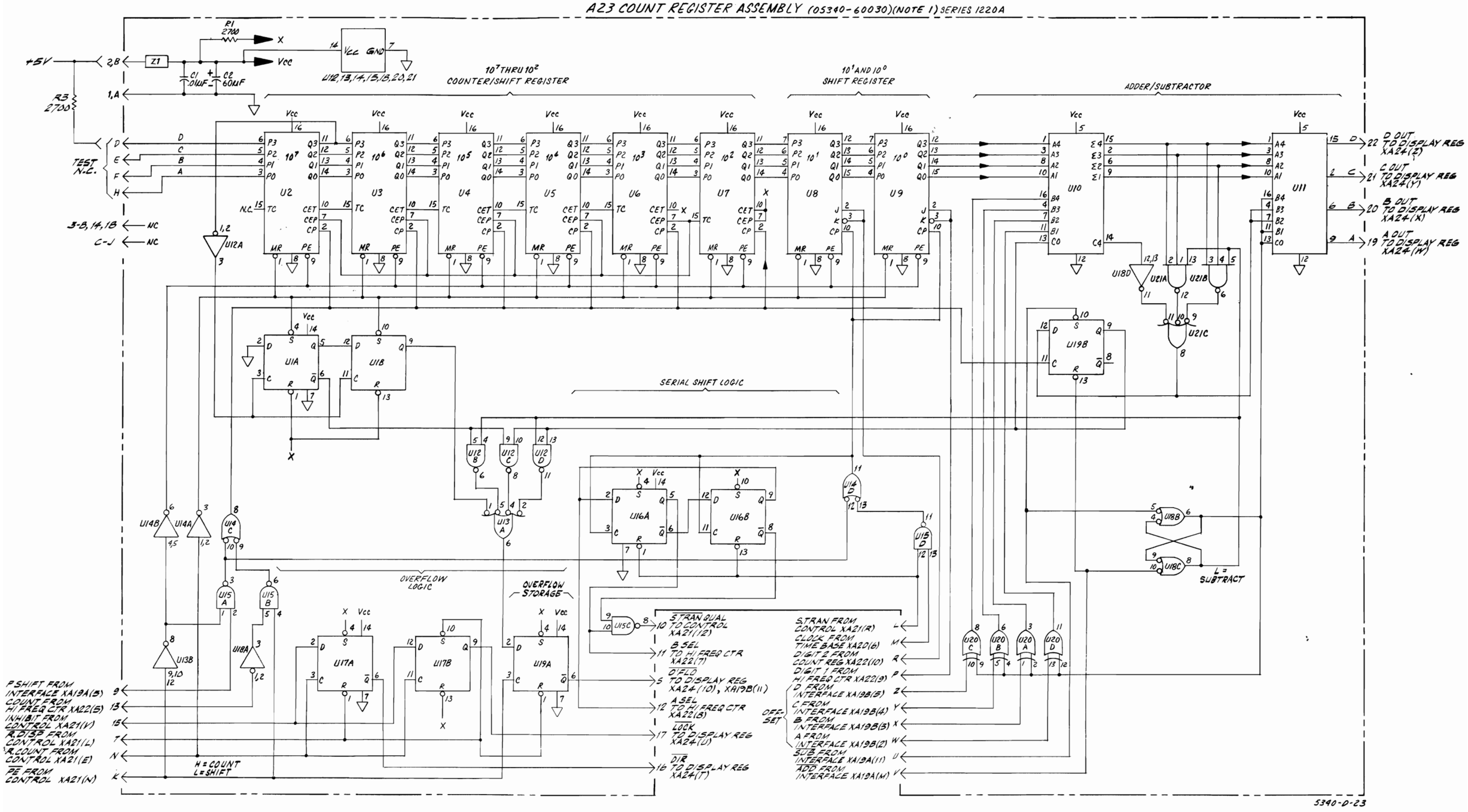
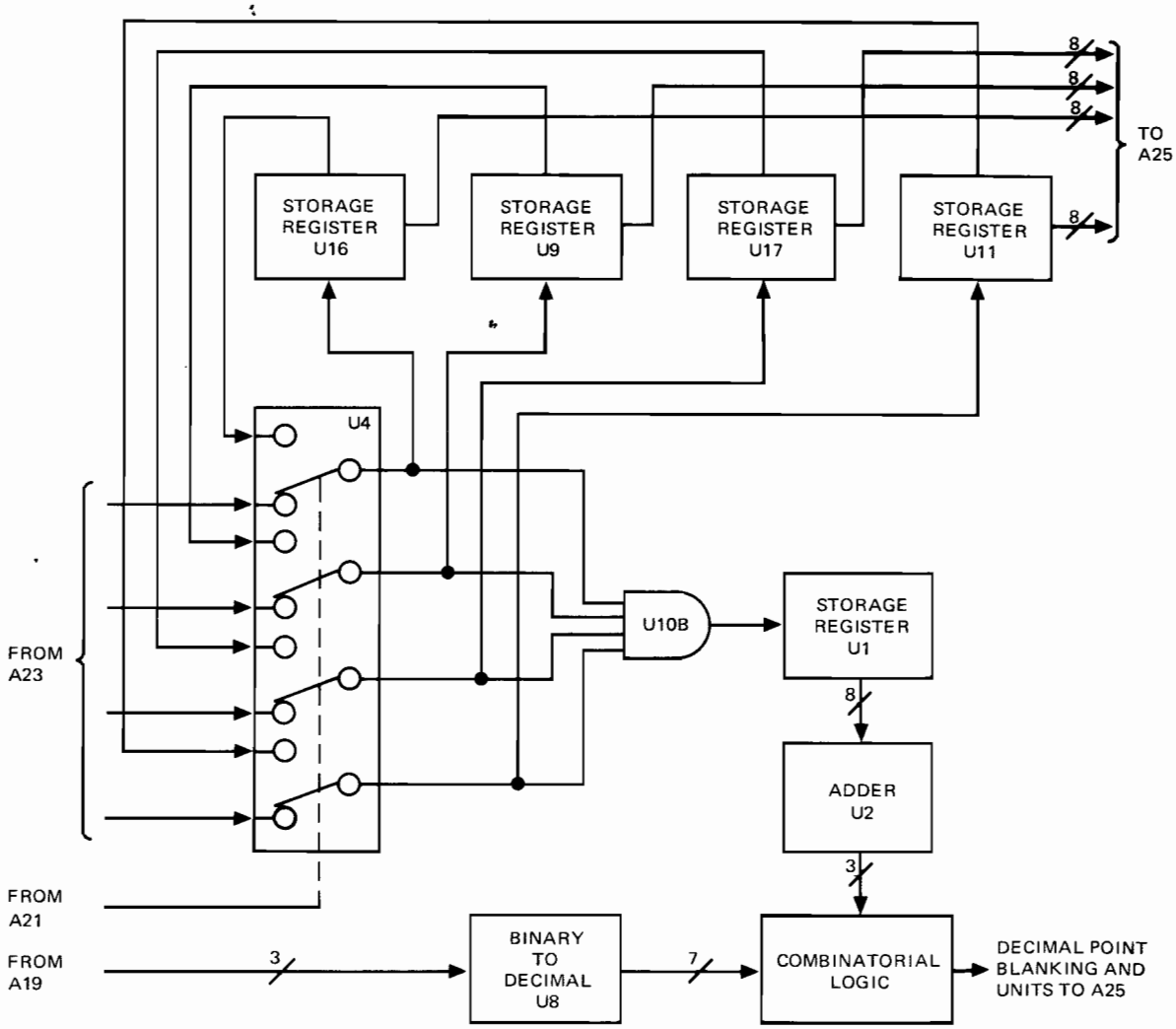


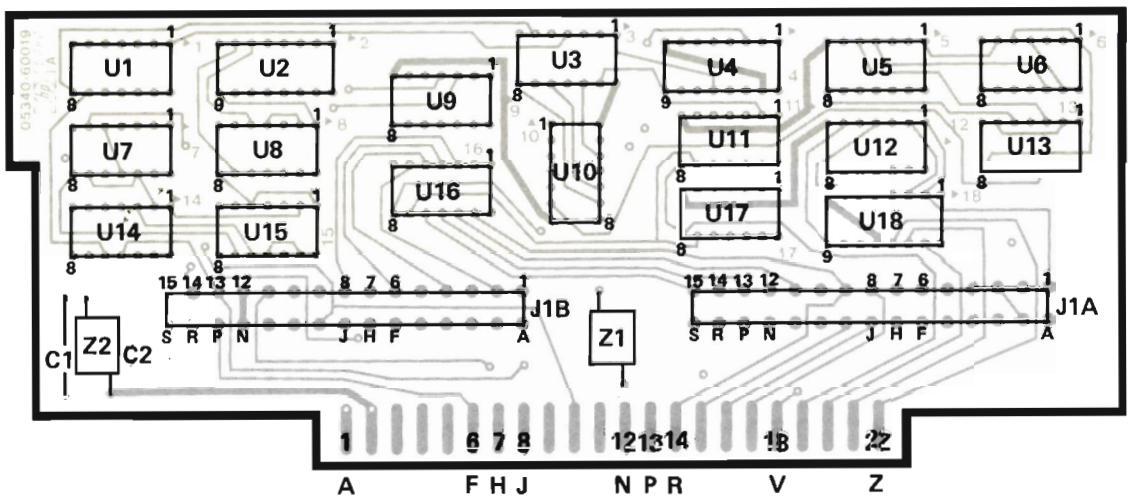
Figure 8-30. A23 Count Register Assembly

Figure 8-30
A23 COUNT REGISTER ASSEMBLY

(See Page 8-61)

Part of Figure 8-31. A24 Display Register Assembly





NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES

A24
C1,2 J1 P1 U1-18 Z1,2

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
U1,9,11,16,17	1820-0294 509935
U2	1820-0657 9318
U3,14	1820-0174 SN7404N
U4	1820-0616 9322
U5,10	1820-0069 SN7420N
U6,15	1820-0587 DM74L10N
U7	1820-0583 DM74L00N
U8,13	1820-0054 SN7400N
U12	1820-0589 DM74L30N
U18	1820-1047 SN74142A

5340-D-21

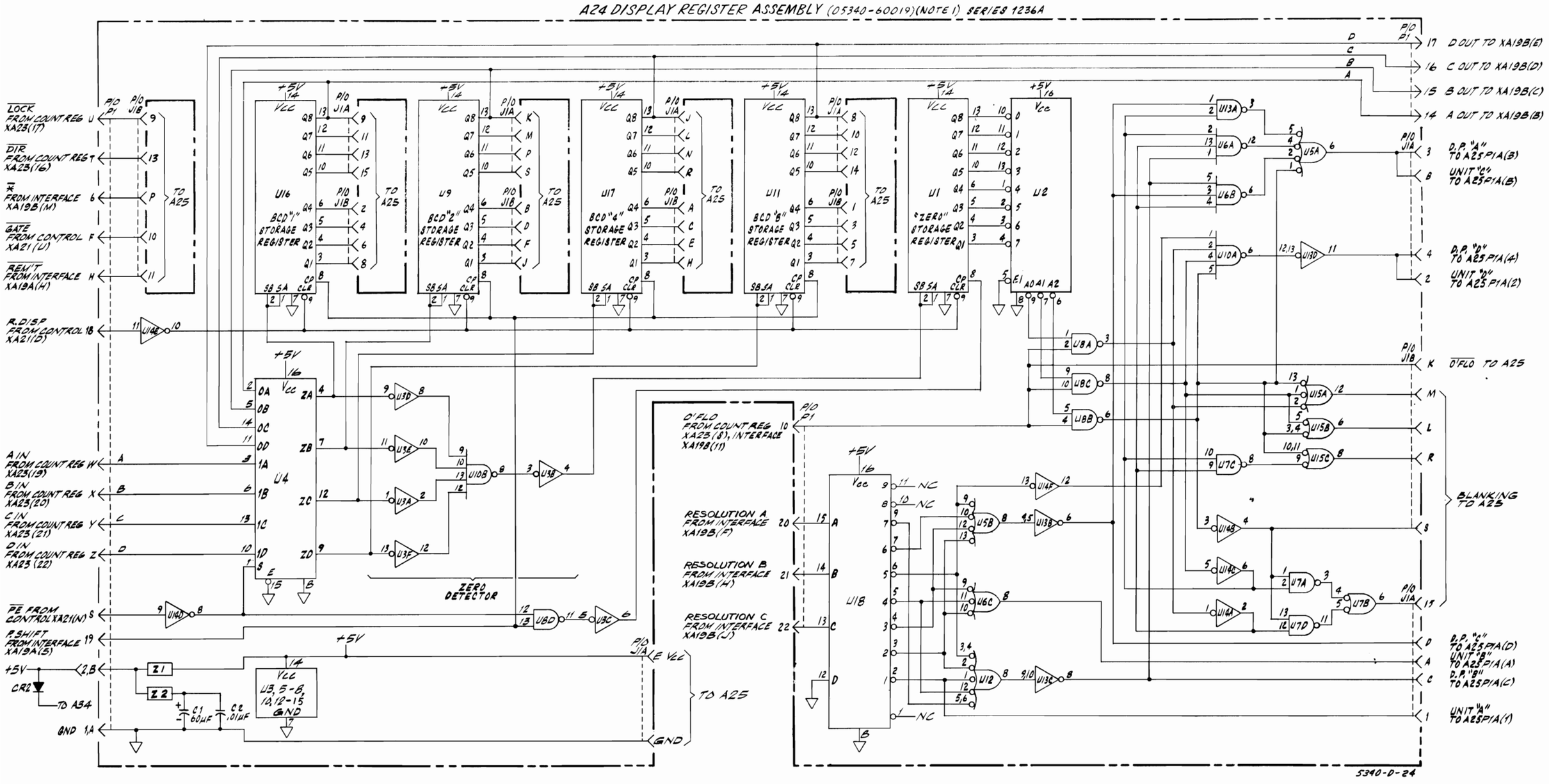
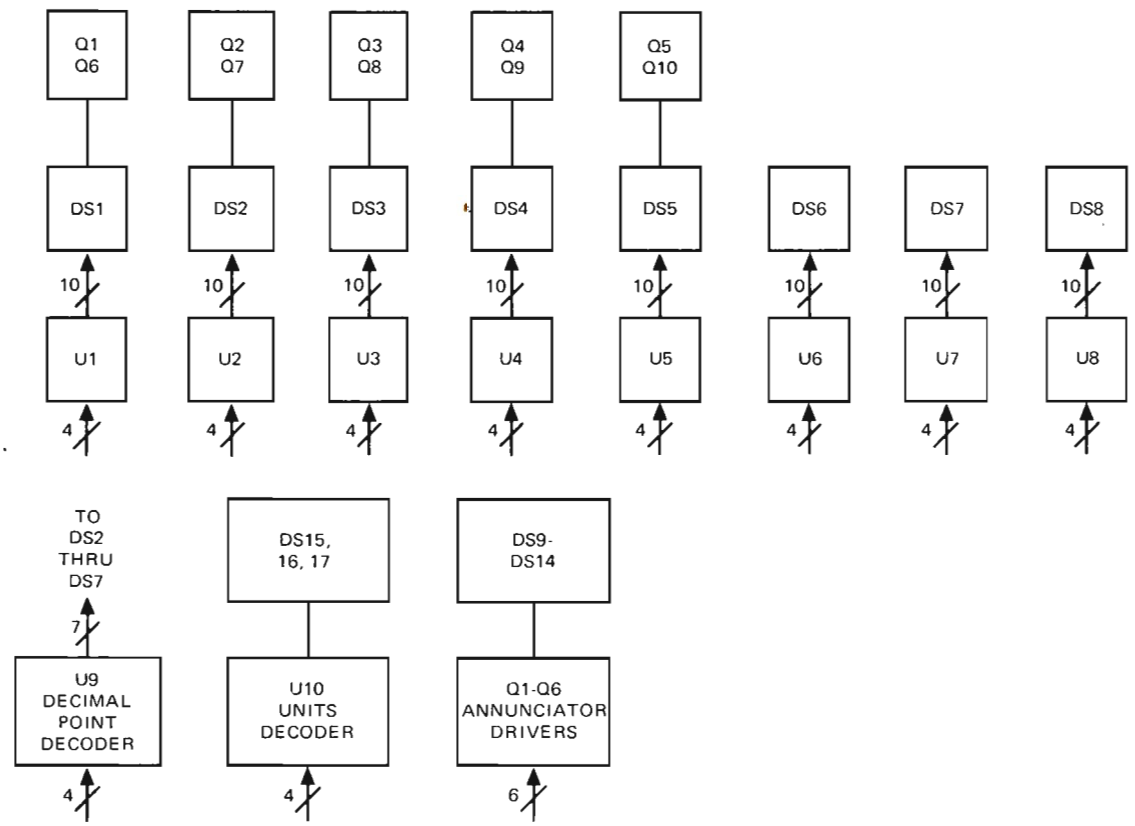


Figure 8-31. A24 Display Register Assembly

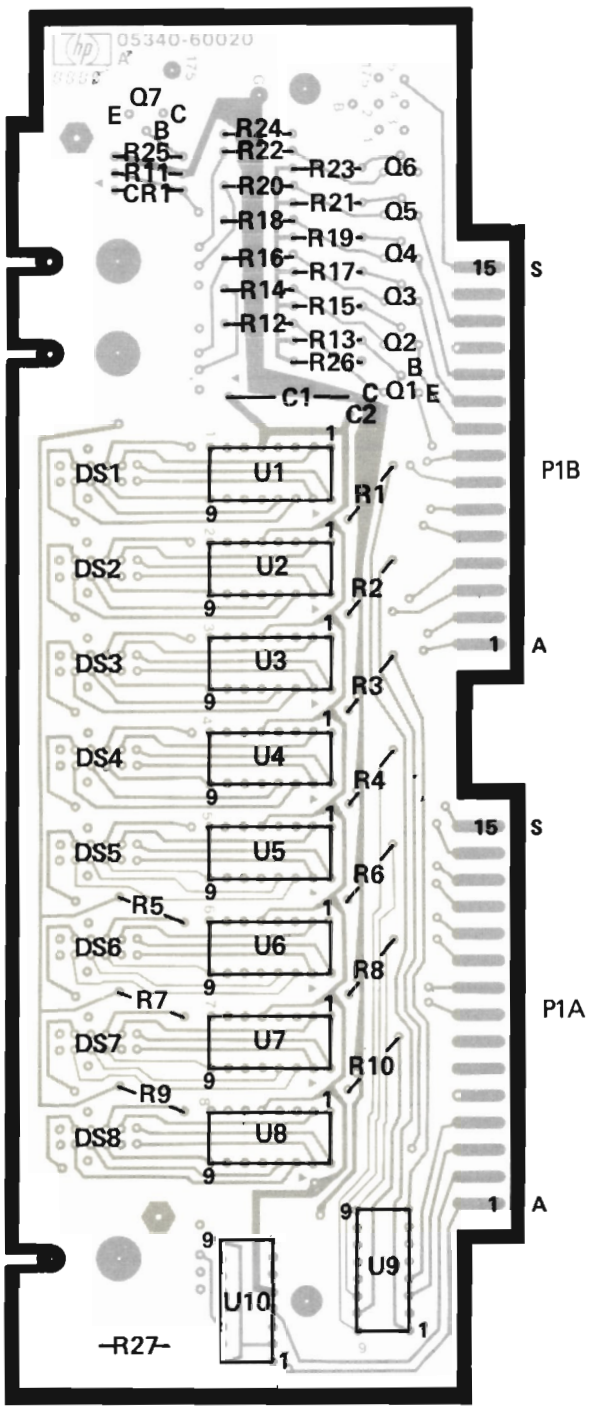
Figure 8-31
A24 DISPLAY REGISTER ASSEMBLY

(See Page 8-63)

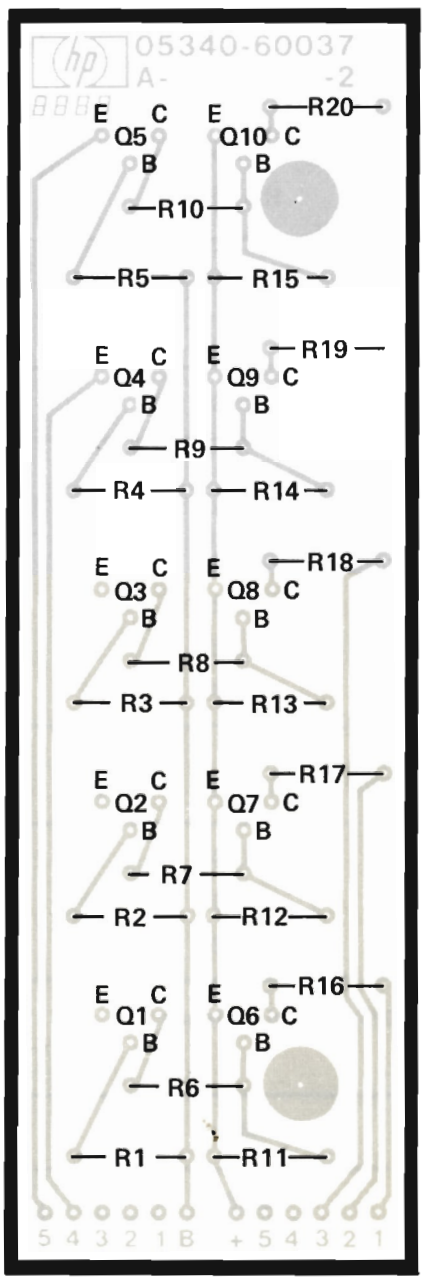
Part of Figure 8-32. A25 Display Assembly, A26 Blanking Assembly



A25


05340-60020
Q7
E
C
B
R24
R25
R22
R11
R23
Q6
CR1
R20
R21
Q5
R18
R19
Q4
R16
R17
Q3
R14
R15
R12
R13
Q2
R26
B
C1
C
Q1
E
C2
DS1
U1
R1
DS2
U2
R2
DS3
U3
R3
DS4
U4
R4
DS5
U5
R6
R5
DS6
U6
R8
R7
DS7
U7
R10
R9
DS8
U8
U9
U10
R27
15
S
P1B
1
A
15
S
P1A
1
A

A26


05340-60037
A-
-2
E
C
Q5
B
R20
Q10
R10
R5
R15
R19
Q4
Q9
R9
R4
R14
R18
Q3
Q8
R8
R3
R13
R17
Q2
Q7
R7
R2
R12
R16
Q1
Q6
R6
R1
R11
5 4 3 2 1 B + 5 4 3 2 1

A26 BLANKING ASSEMBLY (05340-60037)(NOTE 1) SERIES 1236A

A25 DISPLAY ASSEMBLY (05340-60020)(NOTE 1) SERIES 1236A

NOTES

REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.

2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

A25	A26
C1, 2	
CR1	
DS1-17	
P1	
Q1-7	Q1-10
R1-27	R1-20
U1-10	

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
A25	
CR1	1902-3531
Q1-6	1854-0533
Q7	1854-0071
U1-10	1820-1161
A26	
Q1-5	1854-1533
Q6-10	1853-0317

Figure 8-32. A25 Display Assembly, A26 Blanking Assembly

Figure 8-32
A25 DISPLAY ASSEMBLY, A26 BLANKING ASSEMBLY

(See Page 8-65)

Part of Figure 8-33. A28, A29, and A30

A28 05340-60022 Typical Voltages

+175 Volt Power Supply

	Emitter	Base	Collector
Q2	164.8	162	134.70
Q4	135	134.70	167
Q6	133.25	135	167
Q9	133.05	133.36	134.70

-15 Volt Power Supply

	Emitter	Base	Collector
Q1	-23.7	-23.0	-22.36
Q3	-23.0	-22.36	-18.87
Q5	-18.24	-18.87	-23.7
Q7	-15.82	-16.53	-17.53
Q8	-15.12	-15.49	-16.53
Q10	-18.26	-17.53	-15.82

U1	1 -7.53	2 -15.91	3 -18.25	4 -15.92	5 -18.25	6 -17.89	7 -16.55	8 -15.12	9 0

XA28(14,R)	-15.19
TP1	-18.24
TP2	-15.12

A29 05340-60025 Typical Voltages

+15 Volt Power Supply

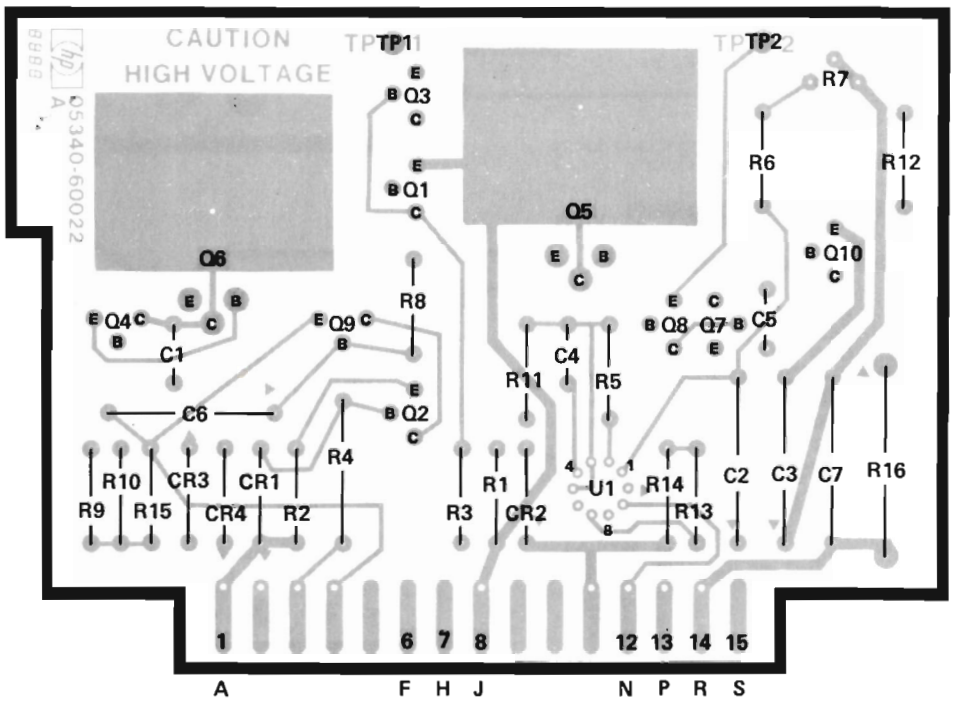
	Emitter	Base	Collector
Q1	22.8	22.16	18.92
Q2	18.27	18.90	23.57
Q3	15.52	16.23	18.31

U1	1 15.16	2 7.16	3 7.17	4 7.18	5 0	6 16.23	7 18.31	8 18.31	9 17.40

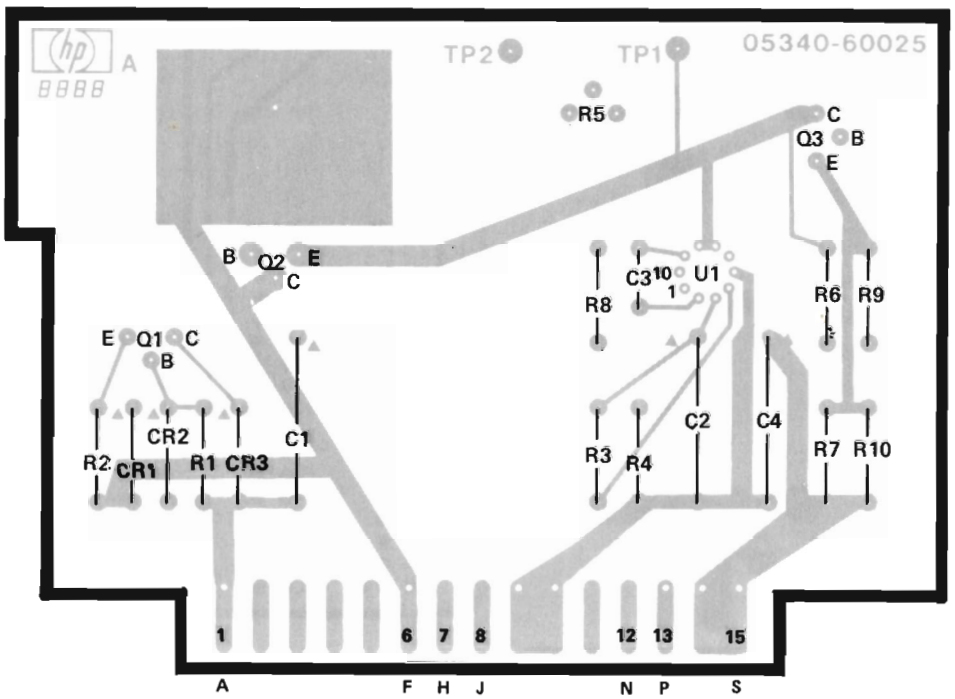
XA29(14,R,15,S)	15.16
TP1	18.31
TP2	15.158

Part of Figure 8-33. A28, A29, and A30

A28

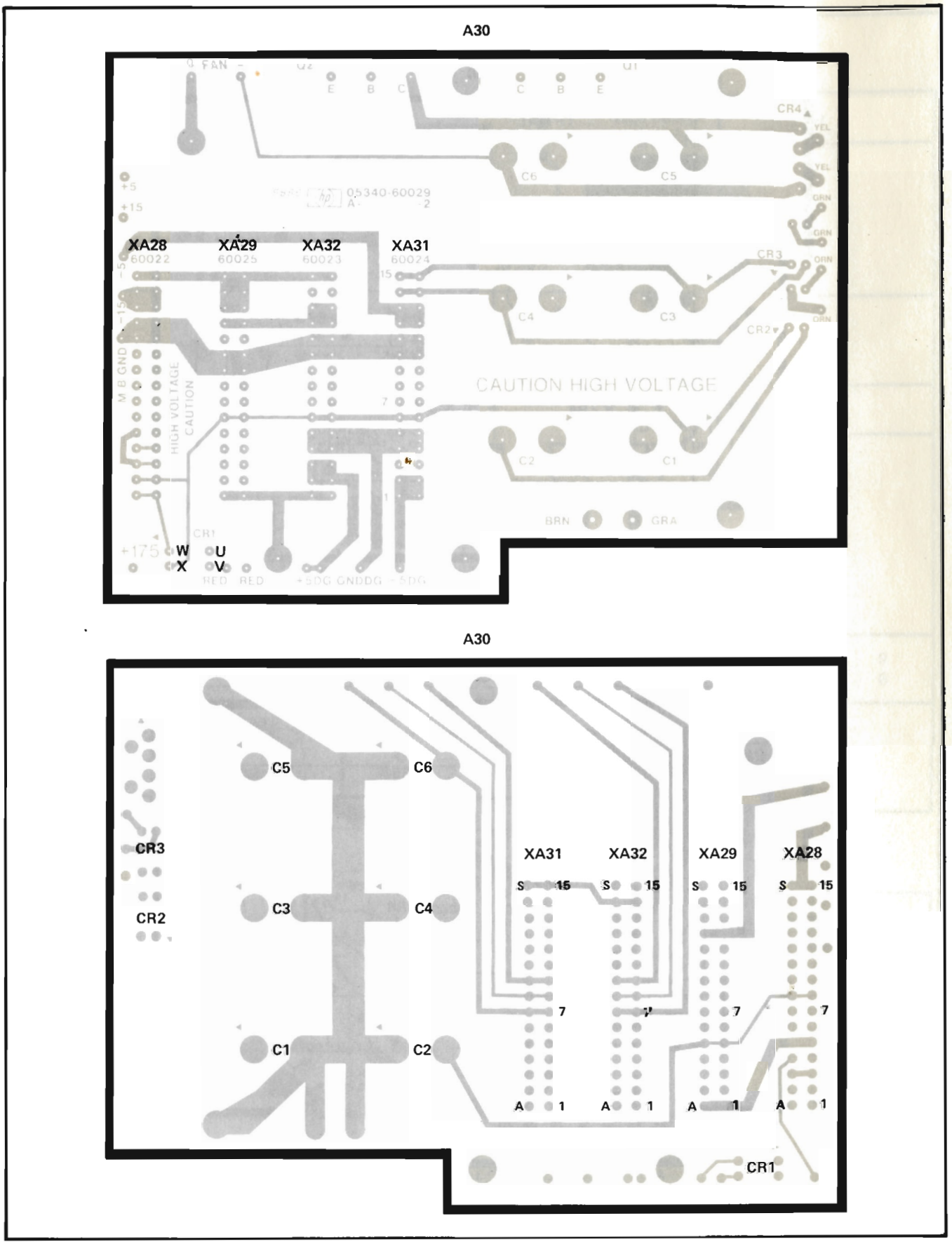


A29



VIII

Part of Figure 8-33. A28, A29, and A30



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES
3. S1 CONNECTED TO S6 VIA W1
4. THE +175V POWER SUPPLY WILL READ APPROX. 135V rms ON MANY VOLTMETERS DUE TO ITS HIGH RIPPLE.
5. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUE SHOWN.

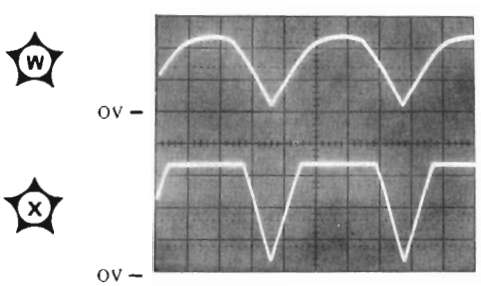
REFERENCE DESIGNATIONS

NO PREFIX	A28	A29	A30
B1	C1-7	C1-4	C1-6
C1	CR1-4	CR1-3	CR1-3
CR4	Q1-10	Q1-3	XA28,29
F1	R1-16	R1-10	
J6	TP1, 2	U1	
S1,6	U1		
T1			
TH1			

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
NO PREFIX	
CR4	1906-0038
Q1	1854-0072
	2N3054
Q2	1854-0063
	2N3055
A28	
CR1	1902-0049
CR2	1902-3234
CR3	1902-3428
CR4	1902-3393
Q1,3	1854-0071
Q2	1853-0240
Q4	1854-0232
Q5	1853-0254
Q6	1854-0330
Q7,8	1853-0020
Q9	1854-0533
Q10	1854-0039
	2N3053
U1	1826-0016
	LM204H
A29	
CR1,2	1901-0040
CR3	1902-3234
Q1	1853-0020
Q2	1854-0420
Q3	1854-0039
U1	1826-0010
A30	
CR1,2,3	1906-0027

5340-D-27



W XA28(1,A) 10 V/c, dc, 2 ms/div

X XA28(4,D) 5 V/cm dc, 2 ms/div

Waveforms taken with 10:1 divider probe, oscilloscope sync set to ac INT, SLOPE, to +, and DISPLAY to CHOP

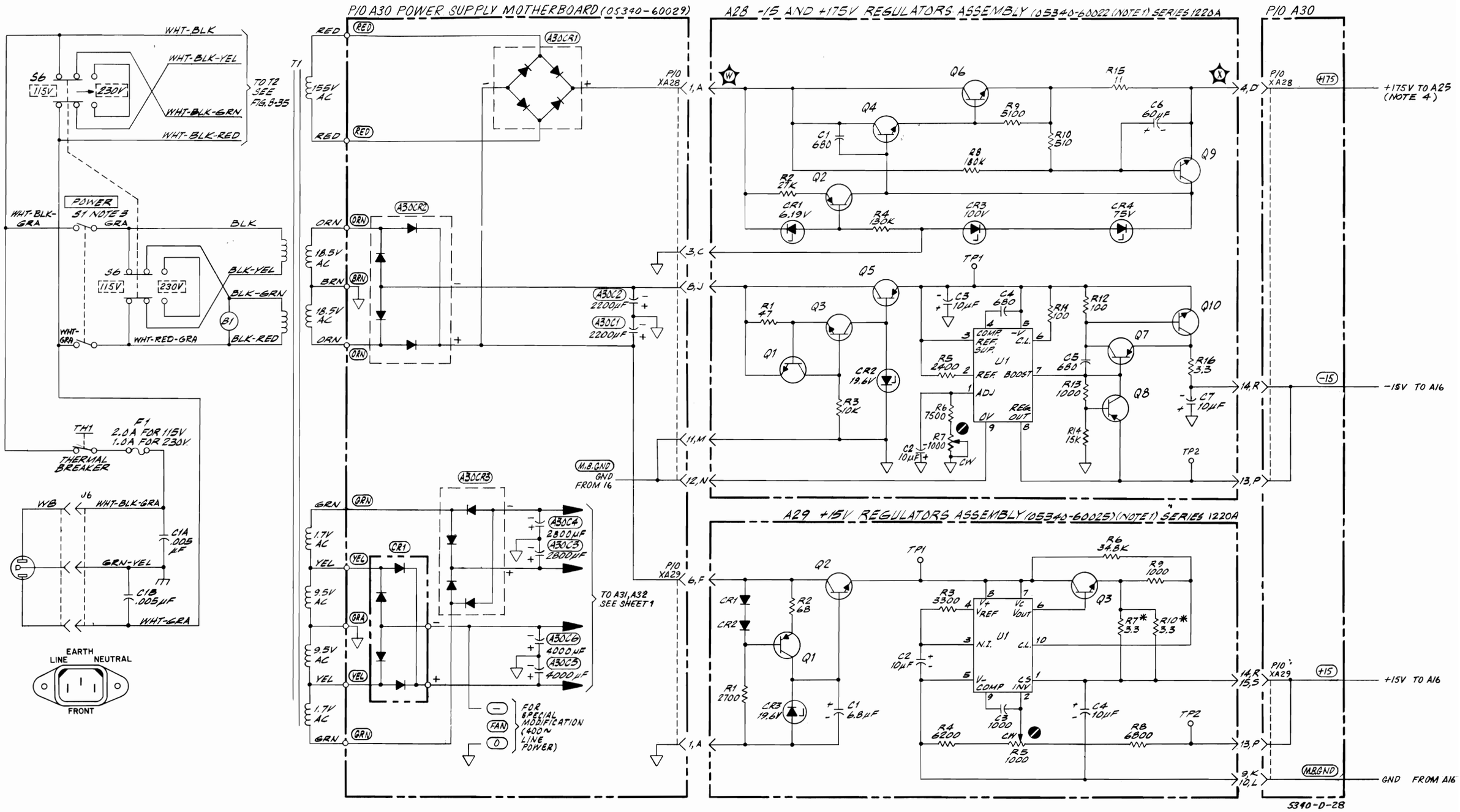


Figure 8-33. A28 -15V and +175V Regulators Assembly, A29 +15V Regulator Assembly, A30 Power Supply Motherboard

Figure 8-33
A28 -15V AND +175V REGULATORS ASSEMBLY,
A29 +15V REGULATOR ASSEMBLY,
A30 POWER SUPPLY MOTHERBOARD

(See Page 8-69)

Part of Figure 8-34. A30, A31, and A32

A31 05340-60024 Typical Voltages

-5 Volt RF Power Supply

	Emitter			Base			Collector		
Q1	-15.95			-15.38			-14.76		
Q2	-15.38			-14.76			-8.74		
Q3	-8.10			-8.74			-15.95		
Q4	-5.52			-6.22			-7.39		
Q5	-5.02			-5.52			-6.22		
Q8	-8.10			-7.39			-5.52		
U1	1 -2.50	2 -5.76	3 -8.10	4 -5.92	5 -8.11	6 -7.93	7 -6.22	8 -5.03	9 0

TP1	-8.11
TP2	-5.02
XA31(13,P)	-5.04

-5 Volt Digital Power Supply

	Emitter			Base			Collector		
Q6	-5.87			-6.63*			-11.23		
Q7	-5.01			-5.30			-6.63		
U1	1 -2.49	2 -9.63	3 -11.96	4 -9.78	5 -11.96	6 -11.77	7 -6.63	8 -5.01	9 0

TP3	-5.01
XA31(9,K	-5.88
XA31(8,J)	-11.23
XA31(7,H)	-11.91
XA33(1,A)	-5.08

VIII

Part of Figure 8-34. A30, A31, and A32

A32 05340-60023 Typical Voltages

+5 Volt RF Power Supply

	Emitter	Base	Collector
Q1	14.75	14.11	10.73
Q2	9.59	10.73	15.27
Q5	5.36	5.99	9.54

	1	2	3	4	5	6	7	8	9	10
U1	5.10	5.04	5.04	7.05	0	5.99	9.54	15.15	7.13	5.56

TP1	5.04
XA32(13,P)	5.06

+5 Volt Digital Power Supply

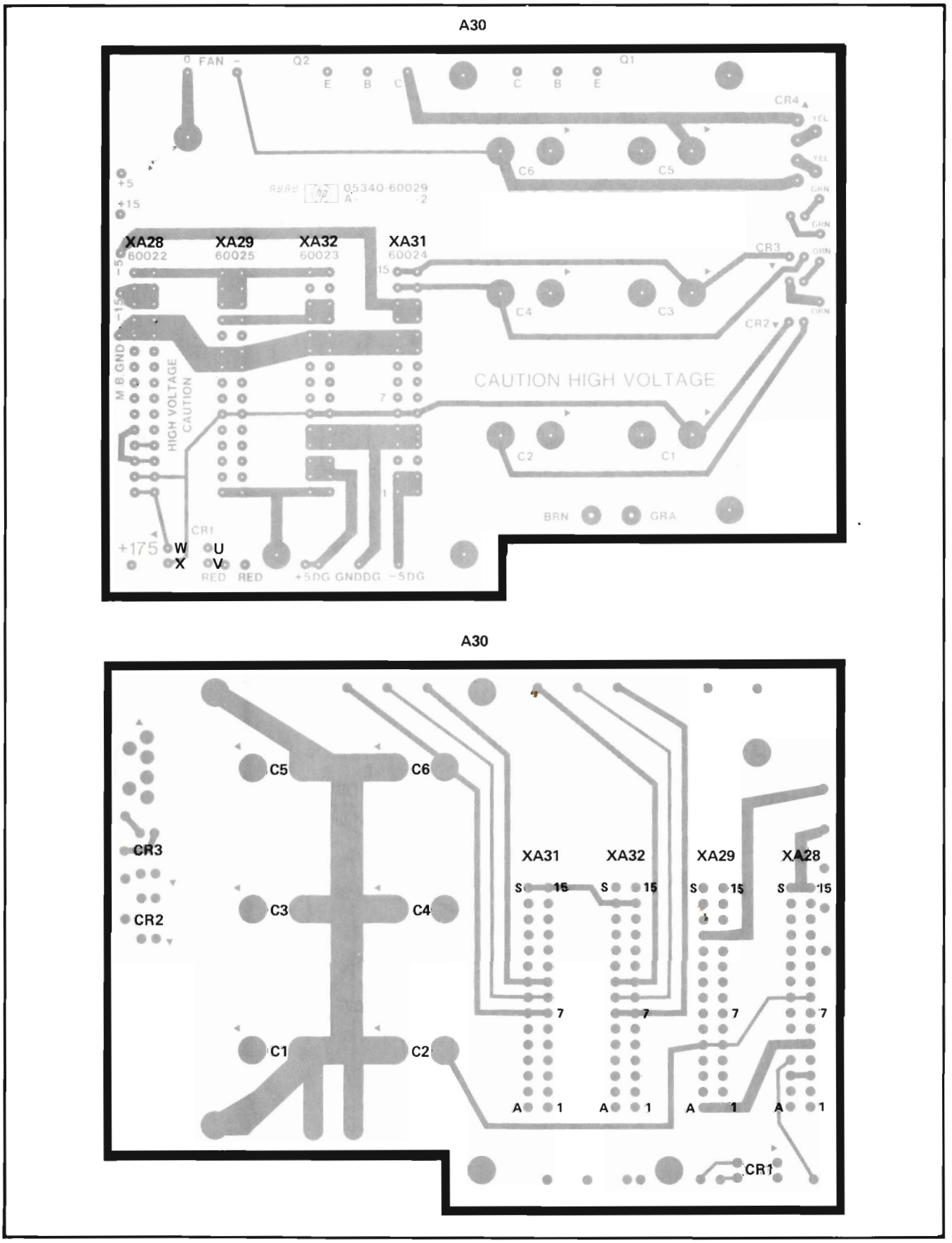
	Emitter	Base	Collector
Q3	10.97	10.33	6.44
Q4	5.23	5.53	6.53

	1	2	3	4	5	6	7	8	9	10
U2	5.23	5.03	5.04	7.03	0	5.53	10.33	23.6	6.53	5.60

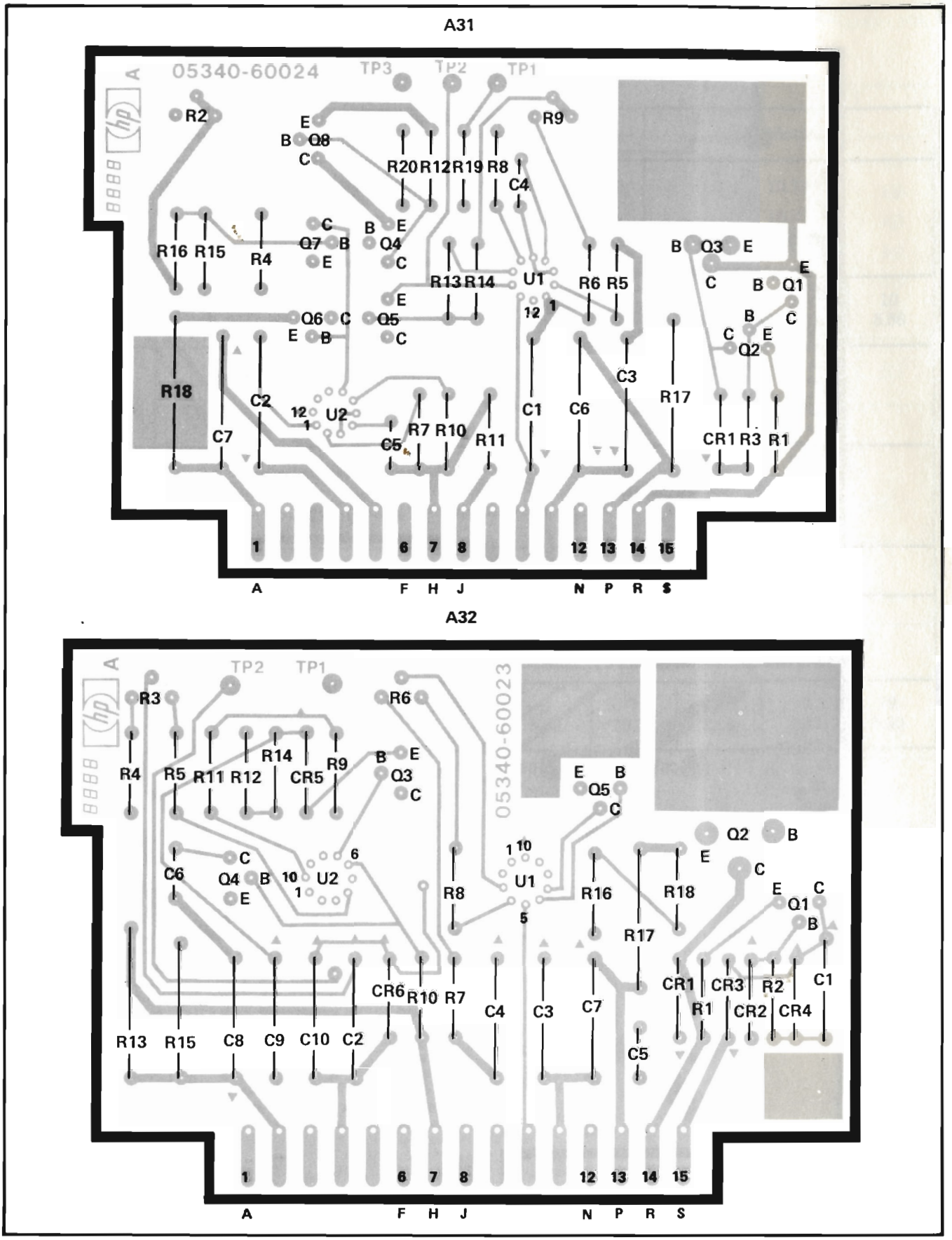
TP2	5.03
XA32(2,B)	5.24
XA32(7,H)	5.55
XA32(8,J)	6.45
XA32(9,K)	10.97

VIII

Part of Figure 8-34. A30, A31, and A32



Part of Figure 8-34. A30, A31, and A32



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS;
 INDUCTANCE IN MICROHENRIES
3. S1 CONNECTED TO S6 VIA W1
4. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUE SHOWN.

NO PREFIX	A30	A31	A32
B1 C1 CR4 F1 J6 Q1,2 S1,6 T1 TH1	C1-6 CR1-3 XA31,32	C1-7 CR1 Q1-8 R1-20 TP1-3 U1,2	C1-10 CR1-6 Q1-5 R1-18 U1,2

ACTIVE ELEMENTS

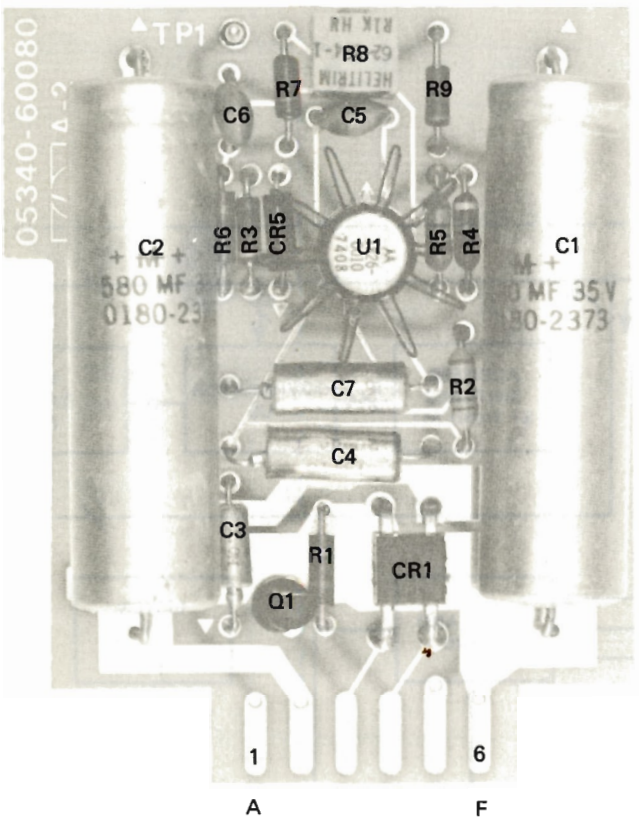
REFERENCE DESIGNATIONS	HP PART NUMBERS
NO PREFIX	
CR1	1906-0038
Q1	1854-0072 2N3054
Q2	1854-0063 2N3055
A30	
CR1,2,3	1906-0027
A31	
CR1	1902-3149
Q1,2	1854-0071
Q3	1853-0254
Q4,5,7	1853-0020
Q6	1853-0012 2N2904A
Q8	1854-0039 2N3053
U1,2	1826-0016 LM204H
A32	
CR1,2,3,5	1901-0040
CR4	1902-3171
CR6	1902-3139
Q1	1853-0020
Q2	1854-0058
Q3	1853-0012 2N2904A
Q4	1854-0071
Q5	1854-0300
U1,2	1826-0010

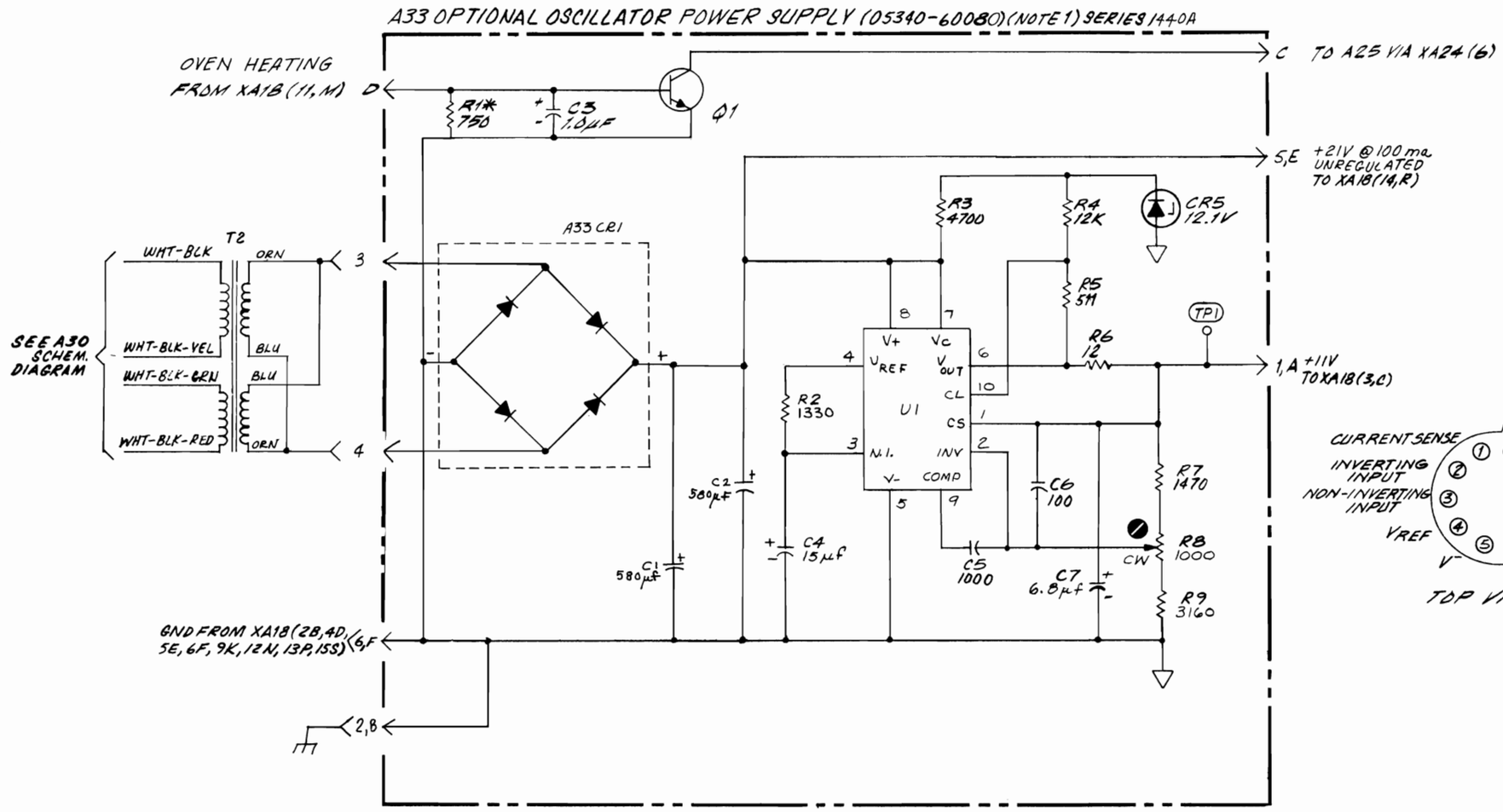
5340-D-27

Figure 8-34. A30 Power Supply Motherboard, A31 -5V Regulator Assembly, A32 +5V Regulator Assembly

Figure 8-34
A30 POWER SUPPLY MOTHERBOARD,
A31 -5V REGULATOR ASSEMBLY,
A32 +5V REGULATOR ASSEMBLY

(See Page 8-75)


05340-60080
TP1
R8
R7
R9
C6
C5
R6
R3
CR5
U1
R5
R4
C2
C1
C7
R2
C4
C3
R1
CR1
Q1
1
6
A
F



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

NO PREFIX	A33
	C1-7 CR1, 5 Q1 R1-9
T2	U1

CR2 THRU CR4 DELETED

ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1	1901-0027
CR5	1902-3182
Q1	1854-0071
U1	1826-0010

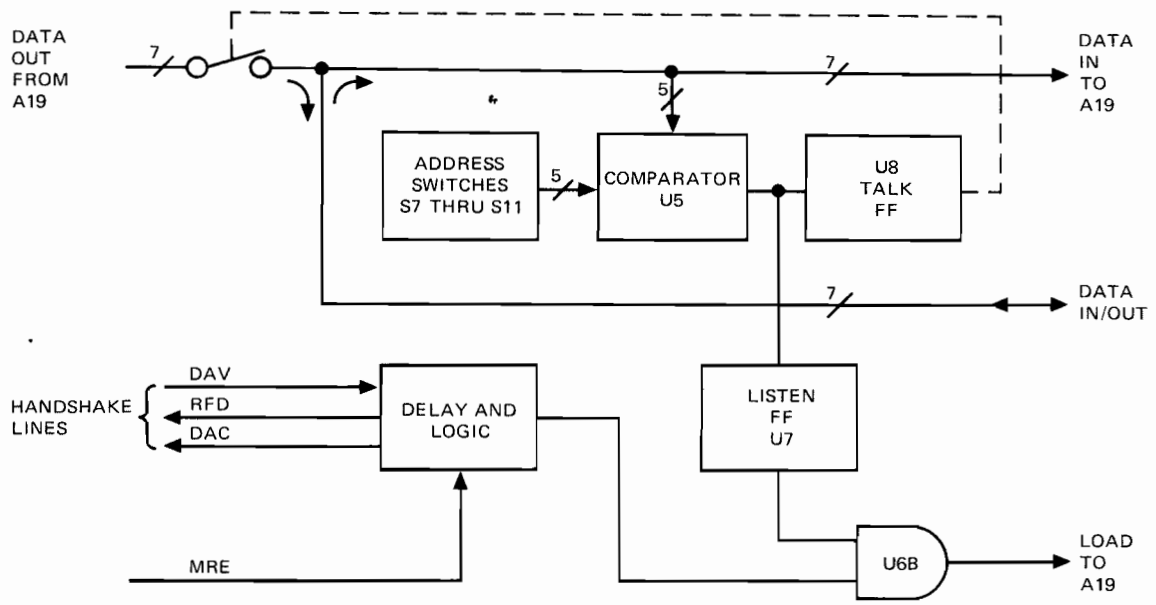
5340-D-39

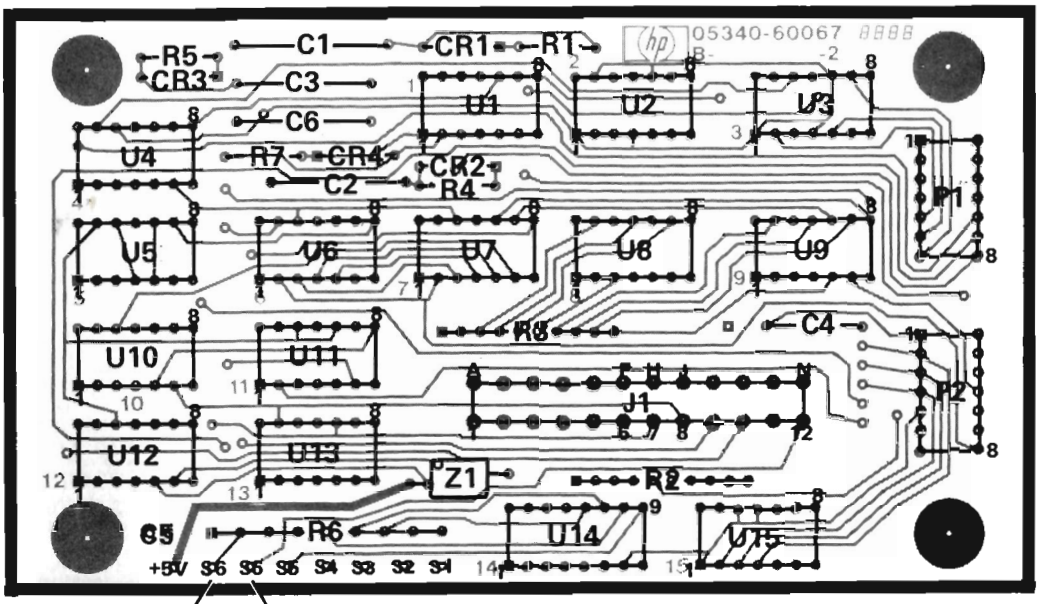
Figure 8-35. A33 Time Base Power Supply (Part of Option 001)

Figure 8-35
A33 OPTIONAL OSCILLATOR POWER SUPPLY
(Part of Option 001)

(See Page 8-77)

Part of Figure 8-36. A34 Bus Communicator Assembly,
A35 Connector Assembly (Part of Option 011)





ACTIVE ELEMENTS

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1-4	1901-0040
U1, 13	1820-1056 SN74132
U2,3.10	1820-0621 SN7438N
U4,11	1820-0054 SN7400N
U5	1820-0588 DM74L20N
U6,7	1820-0065 SN7470N
U8, 9	1820-1053 SN7414N
U12	1820-0585 DM74L04N
U14	1820-0904 93L24
U15	1820-0589 DM74L30N

5340-D-37

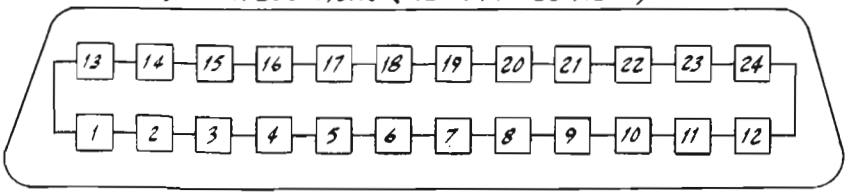
NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
 RESISTANCE IN OHMS;
 CAPACITANCE IN PICOFARADS
3. A34R2A, C, E, G, J, L, N, R EACH 3000 OHM
 A34R3A, C, E, G, J, L, N, R EACH 3000 OHM
 A34R2B, D, F, H, K, M, P, S EACH 6200 OHM
 A34R3B, D, F, H, K, M, P, S EACH 6200 OHM

REFERENCE DESIGNATIONS

A34	A35
C1-6 CR1-4	J1
R1-8	S1-6
U1-12	

A35J1 PIN LOCATIONS (REAR PANEL VIEW)



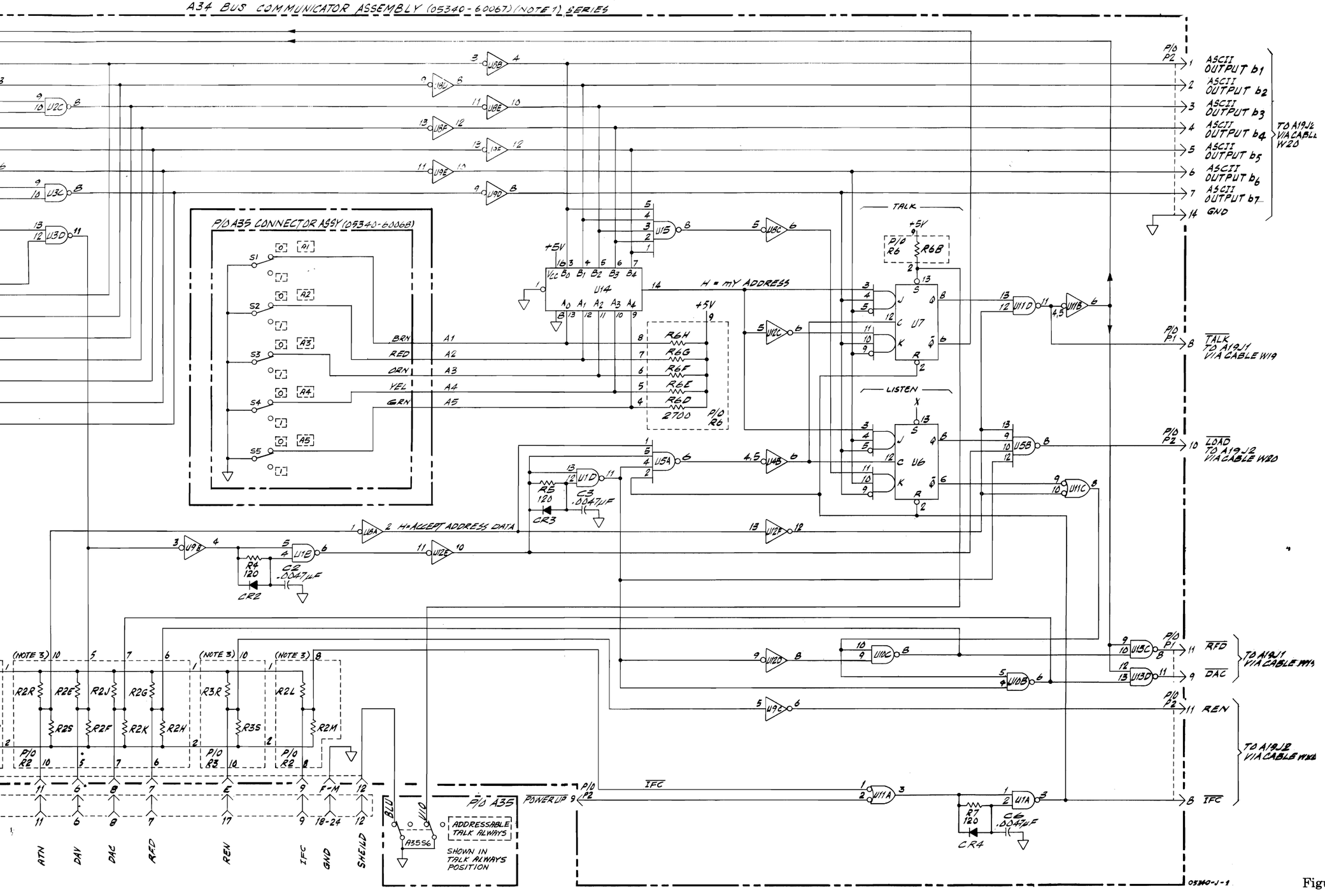


Figure 8-36. A34 Bus Communicator Assembly, A35 Connector Assembly (Part of Option 011)

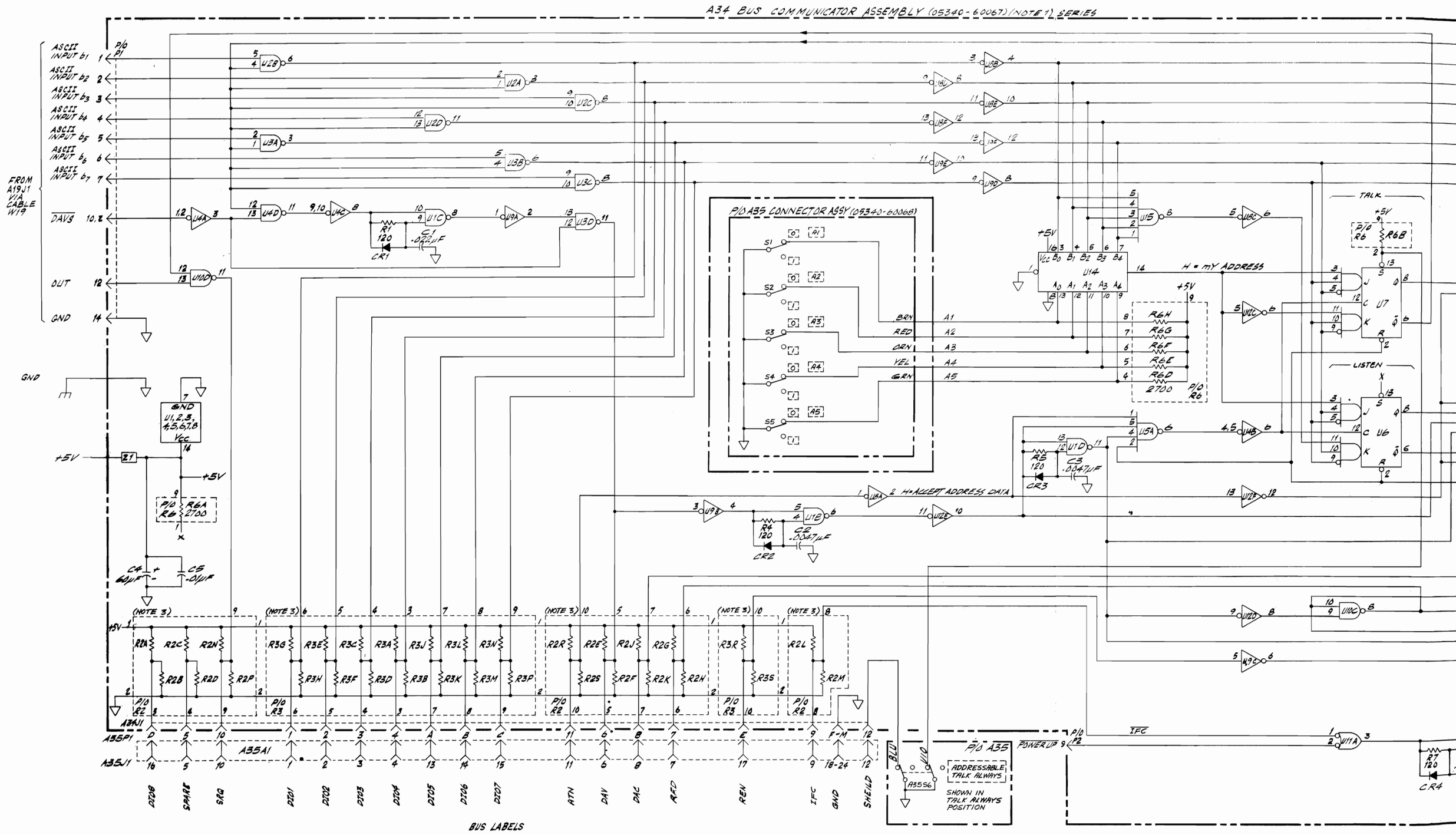

A34 BUS COMMUNICATOR ASSEMBLY (05340-60067) (NOTE 1) SERIES
FROM A19J1 VIA CABLE W19
ASCII INPUT b1
ASCII INPUT b2
ASCII INPUT b3
ASCII INPUT b4
ASCII INPUT b5
ASCII INPUT b6
ASCII INPUT b7
DAVS
OUT
GND
P/O P1
P/O A35 CONNECTOR ASSY (05340-60068)
S1
S2
S3
S4
S5
BRN
RED
ORN
YEL
GRN
A1
A2
A3
A4
A5
+5V
H = MY ADDRESS
TALK
LISTEN
U14
U7
U6
R6H
R6G
R6F
R6E
R6D
2700
P/O R6
R6B
R5
120
C3
.0047μF
CR3
R4
120
C2
.0047μF
CR2
R1
120
C1
.022μF
CR1
R7
120
CR4
C4
60μF
C5
.01μF
GND
U1, 2, 3, 4, 5, 6, 7, 8
Vcc
Z1
P/O R6A
2700
(NOTE 3)
R2A
R2C
R2N
R2B
R2D
R2P
R3G
R3E
R3C
R3A
R3J
R3L
R3N
R3H
R3F
R3D
R3B
R3K
R3M
R3P
R2R
R2S
R2F
R2K
R2H
R3R
R3S
R2L
R2M
P/O R2
P/O R3
A3J1
A35P1
A35A1
A35J1
D
5
10
1
2
3
4
A
B
C
11
6
8
7
E
9
F-M
12
16
18-24
DIO8
SPARE
SRQ
DIO1
DIO2
DIO3
DIO4
DIO5
DIO6
DIO7
ATN
DAV
EOI
NRFD
NDAC
REN
IFC
GND
SHIELD
BUS LABELS
A35S6
ADDRESSABLE TALK ALWAYS
SHOWN IN TALK ALWAYS POSITION
P/O A35
POWERUP
P/O P2
IFC
H = ACCEPT ADDRESS DATA

Figure 8-36
A34 BUS COMMUNICATOR ASSEMBLY,
A35 CONNECTOR ASSEMBLY
(Part of Option 011)

(See Page 8-79)

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